MICRO FOCUS

Open Enterprise Server 2018 SP3

Migration Tool Administration Guide

October 2021

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About This Guide

This guide describes the functionality and usage of the Open Enterprise Server 2018 SP3 (OES 2018 SP3) migration tool. This guide covers the following topics:

- Chapter 1, “Overview of the Migration Tools,” on page 15
- Chapter 2, “Overview of the Migration GUI,” on page 21
- Chapter 3, “What’s New or Changed in the Migration Tool,” on page 37
- Chapter 4, “Planning for Migration,” on page 41
- Chapter 5, “Using the Migration Tool GUI,” on page 45
- Chapter 6, “Troubleshooting Issues,” on page 49
- Chapter 7, “Preparing for Server Migration,” on page 53
- Chapter 8, “Using the Migration GUI Tool,” on page 55
- Chapter 9, “Preparing for Transfer ID,” on page 61
- Chapter 10, “Using the Migration GUI Tool for Transfer ID,” on page 65
- Chapter 11, “Using Migration Commands for Transfer ID,” on page 73
- Chapter 12, “Running Transfer ID Remotely,” on page 83
- Chapter 13, “Post Transfer ID Migration,” on page 85
- Chapter 14, “Troubleshooting Issues,” on page 89
- Chapter 15, “Security Considerations for Data Migration,” on page 95
- Chapter 16, “Migrating File Systems to OES 2018 SP3,” on page 101
- Chapter 17, “Migrating eDirectory to OES 2018 SP3,” on page 149
- Chapter 18, “Migrating AFP to OES 2018 SP3,” on page 155
- Chapter 19, “Migrating CIFS to OES 2018 SP3,” on page 161
- Chapter 20, “Migrating DHCP to OES 2018 SP3,” on page 173
- Chapter 21, “Migrating DNS to OES 2018 SP3,” on page 187
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- Chapter 26, “Migrating NetStorage to OES 2018 SP3,” on page 235
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- Chapter 28, “Migrating NCP to OES 2018 SP3,” on page 241
- Chapter 29, “Migrating OpenSLP to OES 2018 SP3,” on page 243
- Chapter 30, “Migrating Proxy users to OES 2018 SP3,” on page 245

Audience

This guide is intended for network administrators, installers, and consultants who are involved in migrating data and services to OES 2018 SP3.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of the *Migration Tool Administration Guide*, visit the OES 2018 SP3 Web site (https://www.microfocus.com/documentation/open-enterprise-server/2018-SP3).

Overview

- Chapter 1, “Overview of the Migration Tools,” on page 15
- Chapter 2, “Overview of the Migration GUI,” on page 21
- Chapter 3, “What’s New or Changed in the Migration Tool,” on page 37

1 Overview of the Migration Tools

Migration is the process of migrating services, file system data, and eDirectory information from an existing NetWare 6.5 or OES servers to an OES 2018 or later servers. The Migration tool now supports migration of Active Directory trustees. The Migration Toolkit is designed to meet all your migration needs.

In this document, the supported NetWare and OES servers are referred to as the source server, and the OES 2018 SP3 server is referred to as the target server.

The following topics are discussed in this section:

- "Migration Tool Enhancements" on page 15
- "Different Migration Tools" on page 15
- "Migration Scenarios" on page 16
- "Support Matrix for NetWare and OES Services" on page 18

Migration Tool Enhancements

The Migration Tool has an enhanced graphical user interface (GUI), which enables you to migrate all the services from the source server to the target server. The Migration Tool uses a plug-in architecture and is made up of Linux command line utilities with a GUI wrapper.

Features

- Supports migration of AD trustees
- Transfer ID GUI now supports proxy migration from source OES Linux server to target OES 2018 SP3 server.
- In Transfer ID, you can perform unattended full repair of eDirectory (existing option in earlier OES releases) and local eDirectory database and network repair
- Use a Transfer ID scenario to migrate the server identity.
- Create a migration project to migrate multiple services.
- Schedule and run the migration at your convenience.
- Receive an e-mail message indicating the success or failure of the migration process.
- Display the status of the migrating service and display service-specific logs.
- Display the overall progress of migration and display the logs.
- View a summary of the options configured for each service and for the entire migration project.

Different Migration Tools

The following table lists the tool to use for migrating services, depending on the source platform and target platform.

Table 1-1 *Migration Tools Matrix*

Source Platforms	Target Platforms	Migration Tool	For Information
From any of these physical servers: ◆ OES 2018 SP3 ◆ OES 2018 SP2 ◆ OES 2018 SP1 ◆ OES 2018 ◆ OES 2015 SP1 ◆ OES 2015 ◆ OES 11 SP3 ◆ OES 11 SP2 ◆ OES 2 SP3 Linux on SLES 10 SP4 ◆ NetWare 6.5 SP8	To this physical or virtualized server: ◆ OES 2018 SP3	Migration Tool	Chapter 2, "Overview of the Migration GUI," on page 21
From any of these physical servers: ◆ NetWare 5.1 SP8	To this physical or virtualized server: ◆ NetWare 6.5 SP8	Server Consolidation Migration Toolkit 1.2	Server Consolidation and Migration Toolkit Administration Guide

Migration Scenarios

The Migration Tool supports the following scenarios:

- "Migrate" on page 16
- "Transfer ID" on page 18

Migrate

The Migrate scenario helps you reorganize your network by copying the service configuration and data from any number of source servers to the target server. By consolidating data on new, more powerful servers, you can simplify your network administration processes and lower your IT costs.

This section describes example scenarios of how to consolidate your data.

- "Sample Scenarios" on page 17
- "Cross-Platform Data Consolidations" on page 18

Sample Scenarios

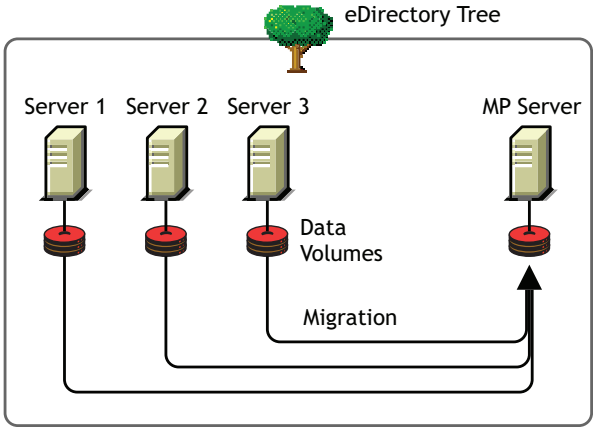
The benefits of the Migration Tool can be better understood through examining some sample scenarios.

- "Basic Server Consolidation: Many-to-One" on page 17
- "Consolidating Data from Multiple Servers onto a Two-Node Cluster" on page 17

Basic Server Consolidation: Many-to-One

In this scenario (see Figure 1-1), you have three existing OES servers. You recently purchased a multiprocessor server and installed OES 2018 SP3 on it. You want to copy the data from each of the three servers to the single OES 2018 SP3 server. Instead of manually moving all the data or backing up the data on each of the three servers and then restoring it on the OES 2018 SP3 server, you can use the Migration Tool to automate the process.

Figure 1-1 *Many-to-One Server Consolidation*

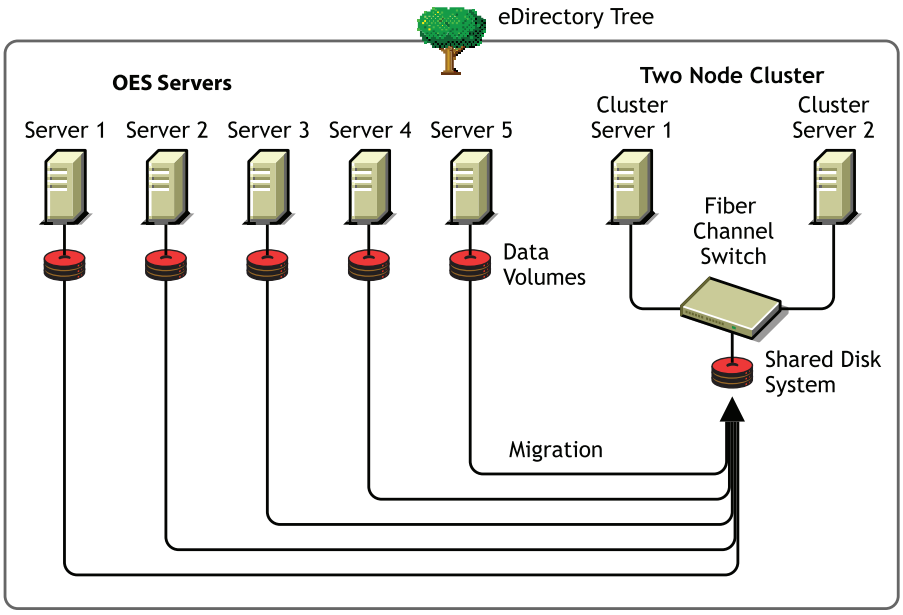


Although Figure 1-1 shows a consolidation scenario in which all servers are in the same eDirectory tree, you can also perform tree-to-tree consolidations.

Consolidating Data from Multiple Servers onto a Two-Node Cluster

In this scenario (see Figure 1-2), you have five existing OES servers. You recently purchased two multiprocessor servers and the necessary hardware to create a two-node cluster complete with an attached Storage Area Network (SAN). You decide to install OES 2018 SP3 on the two-node cluster and to copy the data from each of the five servers to the SAN on the two-node cluster. Instead of manually moving all the data and Printer Agents or backing up the data and restoring it to the SAN, you can use the Migration Tool, which automates the data migration process.

Figure 1-2 *Cluster Server Consolidation*



Cross-Platform Data Consolidations

The Migration Tool supports cross-platform data consolidations from supported NetWare or OES servers to an OES 2018 SP3 server.

Transfer ID

Transfer ID is a migration scenario for transferring the server identity of the source server to the target server. The identity of the server is made up of its IP address, hostname, eDirectory identity, NICI keys, and the certificates from the source server. This scenario is only supported in same tree migration.

On successful completion of the Transfer ID migration, the target server functions with the identity of the source server and the source server goes offline.

Support Matrix for NetWare and OES Services

The Table 1-2 lists the support for the source platforms for OES 2018 SP3 services.

The legends used in the following table are:

✓	Supported source platform
✗	Unsupported source platform
NA	Service is not available on that platform
*	iFolder 2

Table 1-2 *Source Platform Support for OES 2018 SP3 Services*

Services	NW 6.5 SP8	OES 2 SP3 (SLES 10 SP4)	OES 11 SP2	OES 11 SP3	OES 2015	OES 2015 SP1	OES 2018	OES 2018 SP1	OES 2018 SP2	OES 2018 SP3
AFP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CIFS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DHCP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DNS	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
DSfW	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
FTP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
iFolder	*	✓	✓	✓	✓	✓	NA	NA	NA	NA
iPrint	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NetStorage	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
NCP	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
NSS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NTP	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA
NetWare Traditional	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA
OpenSLP	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓

NOTE: If the source platforms are NW 5.1, NW 6.0 SP5, OES 1, OES 2 SP2, or OES 11, you must upgrade to the supported source platform listed in the above table.

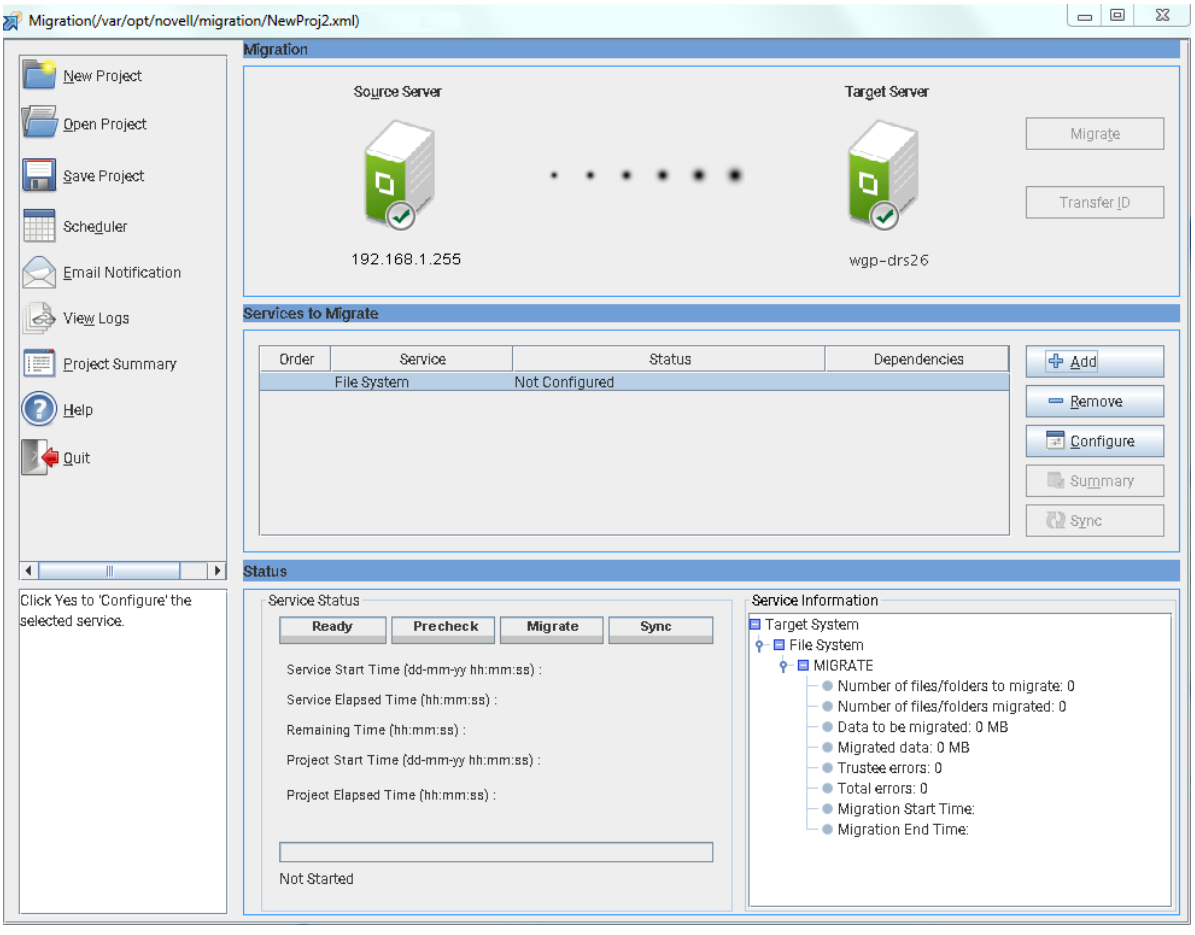
Detailed information on configuring and migrating the above services is documented in Part VII, “Service Migration,” on page 147.

2 Overview of the Migration GUI

This section describes the different panes in the Migration Tool GUI.

- “Project Pane” on page 21
- “Migration Pane” on page 29
- “Services to Migrate Pane” on page 31
- “Migration Status” on page 33

Figure 2-1 *Migration Tool GUI*



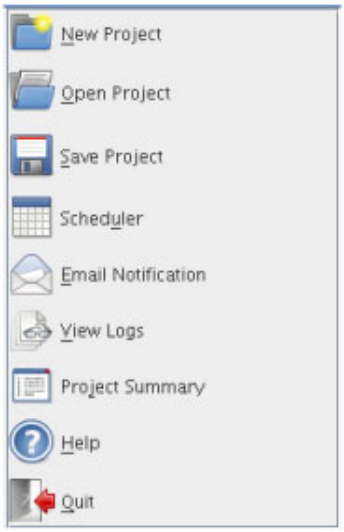
Project Pane

This is the left pane. You use it to access common project options:

- “Create Project” on page 22
- “Schedule Service” on page 23

- “Email Notification” on page 24
- “View Logs” on page 26
- “Project Summary” on page 28
- “Help” on page 28
- “Quit” on page 28
- “Whiteboard” on page 28

Figure 2-2 *Project Pane*



Create Project

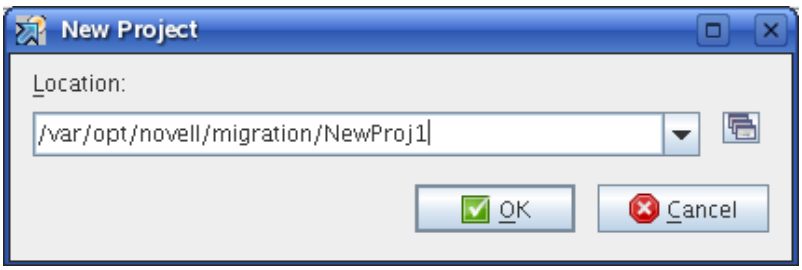
When you start Migration Tool GUI, a default project opens. You can save that project, create a new project or open an existing migration project.

- “New Project” on page 22
- “Load Project” on page 23
- “Save Project” on page 23

New Project

To create a new project, click **New Project**. Specify the location to create the new project.

Figure 2-3 *New Project*



Load Project

To open an existing migration project, click **Open Project**. Select the project, then click **Open**.

Save Project

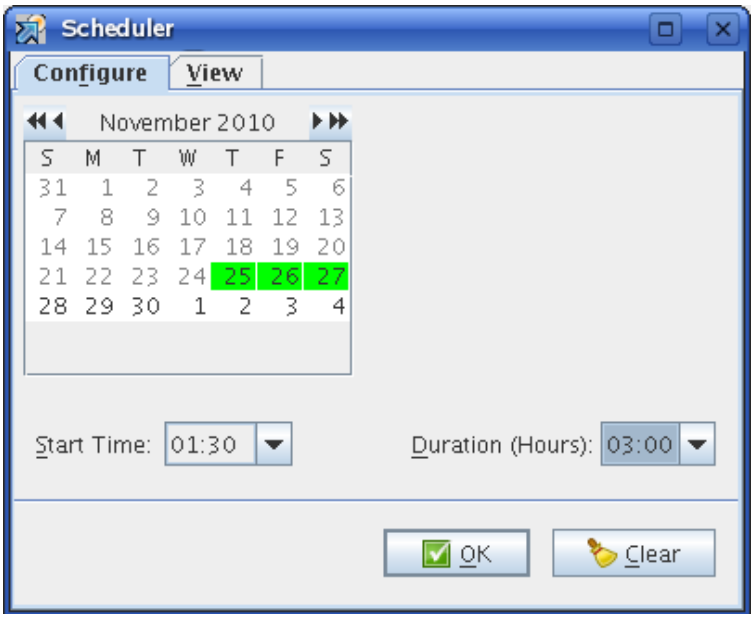
To save a migration project, click **Save Project**, then click **Yes**. Click **No** to save the project to a different location.

For example, `/var/opt/novell/migration/NewProj1.xml`. The migration project file `NewProj1.xml` is saved to the default location.

Schedule Service

You can schedule the migration project to run at your convenience.

Figure 2-4 *Scheduler*



Use the scheduler to perform the following tasks:

- “Configure” on page 23
- “View” on page 24

Configure

You can schedule the migration project to run on multiple days.

1. Select the date in the calendar.
2. Specify the **Start Time** to run the project.
3. Specify the **Duration** to run the project.

4 Click OK to save the schedule.

5 In the main migration window, click Migrate to migrate the service, or click Sync, to synchronize the data at the specified time.

The migration project runs on the scheduled date and time.

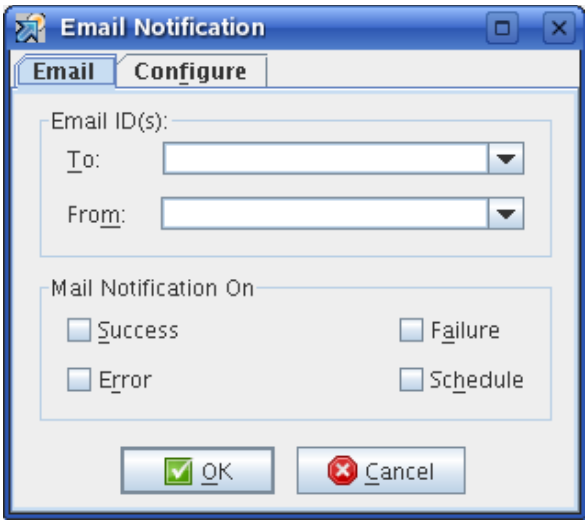
View

Use this tab to see the week view of the scheduled project.

Email Notification

You can set email notifications for receiving the status of the migration.

Figure 2-5 *Notification*



- “Email” on page 24
- “Configure” on page 25

Email

1 In the To field, type the e-mail address of an individual or group to receive notifications. You can include multiple e-mail addresses separated by a comma.

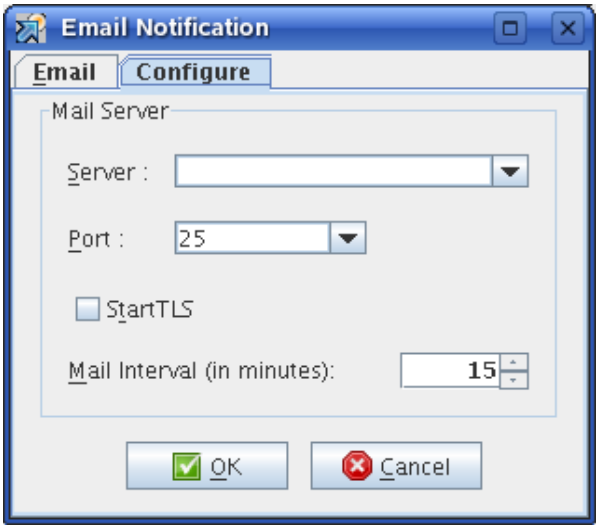
2 In the From field, type the e-mail address that the notification e-mail messages will be sent from.

3 Under Mail Notification On, select the option to generate mail.

If you select all the options, you receive notification through mail, depending on the state of migration. For example, when migration fails, you receive an e-mail message notifying you that migration has failed.

4 Click OK to save the settings.

Configure



1. In the **Server** field, specify the hostname or IP address of the recipient's inbound mail queue.
2. Specify the port for the recipient's mail server. In non-secure mode the default port is 25.
3. To send an e-mail message through a secure SMTP connection, select **StartTLS**.

   For example, to send an e-mail to a gmail account, the IP address is *gmail-smtp-in.l.google.com* and the port is *26*.
4. Specify the mail interval (in minutes) to send e-mail messages for errors encountered. The default time is 15 minutes, but you can increase or decrease the interval as necessary. The e-mail messages are sent only if error notification in the **Email** tab is set and if errors are encountered.

   NOTE: To set default mail settings for multiple projects, update the details in the `migconf.properties` file.

   The e-mail settings can be set by using the `/opt/novell/migration/plugin/conf/migconf.properties` file. Update the values for the following parameters according to your requirements:

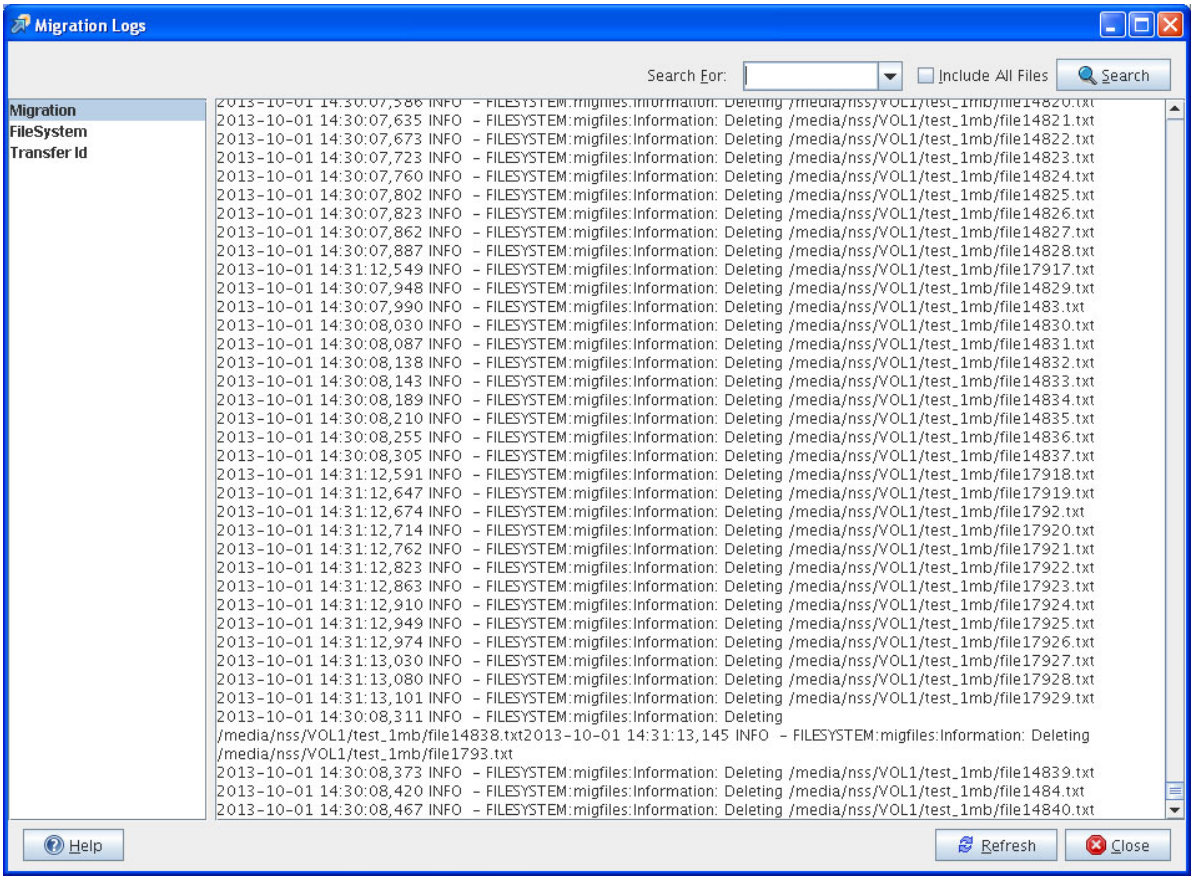
   - mail_server_ip
   - mail_server_port
   - mail_to
   - mail_from
   - populate_values_from_httpstkd

   However, if you want default e-mail settings specified in `/etc/opt/novell/httpstkd.conf` file, then set the populate_values_from_httpstkd parameter to *yes* in the `migconf.properties` file.
5. Click **OK** to save the settings.

View Logs

In the main Migration GUI, click **View Logs**. This displays Migration Logs window with logs for overall migration and service-specific migration. You can select Migration or a service and use the search functionality to filter logs for specific type of error messages or keywords, the results are displayed in a new search window. By default, only the last log file is filtered and results are displayed. You must select the **Include All Files** option to search all log files for a service.

Figure 2-6 *Migration Logs*



The overall progress of migration, sync, and errors are recorded in the common migration file - `migration.log` and service-specific logs in the `servicename.log` file. A log directory is created in the same path as the migration project. The associated output and log files for the project are stored in this directory. For example, `/var/opt/novell/migration/NewProj123/log/migration.log`.

For example, if Migration is selected in the left pane, logs from the `migration.log` file is displayed in the right pane.

During migration, if a fatal error is encountered, migration is stopped and details are logged in the log files.

Search For: Select **Migration** or a service in the left pane. Specify string in the **Search For** text box or select keywords for logs from the drop-down list, then click **Search**, a new window is displayed with the search results. To search all the log files for a project, select the **Include All Files** option.

The keywords are: INFO, DEBUG, WARN, ERROR, and FATAL.

NOTE: The input string for search is case-sensitive to search for keywords.

Include All Files: By default, only the last log file is filtered as per the search string and results are displayed. You must select the **Include All Files** option to search all the log files for a service.

Configuring Log Files

The log files are overwritten after it reaches the maximum limit. You can increase the log file size or number of log files as per your log requirement. The changes can be done to the values of the MaxFileSize and maxBackupIndex parameters in the configuration file at `/etc/opt/novell/migration/Log.xml`.

Customize the following parameters for each log file you want to modify:

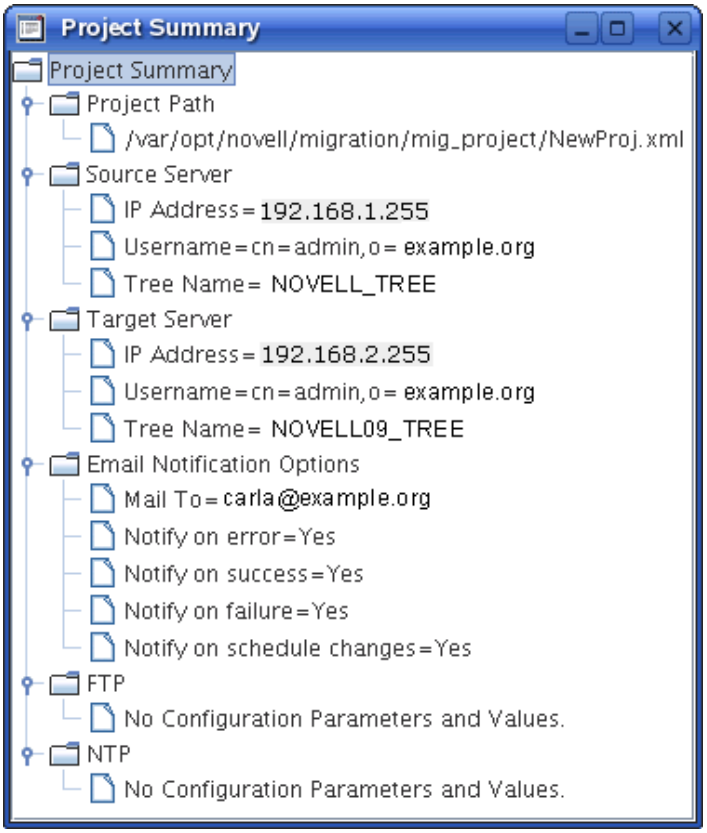
Parameter	Description
MaxFileSize	Specifies the size of the *service.log* file (default: 10 MB) and migration.log and filesystem.log (default: 10 MB).
maxBackupIndex	Specifies the maximum number of files created before the first log file is overwritten. Default value: 10

For example, you can increase the file size of `filesystem.log` to 10 MB by editing the MaxFileSize value in the `Log.xml` file.

Project Summary

This displays a tree view of the options configured for all the services selected for migration.

Figure 2-7 *Project Summary*



Help

This displays the help for the Migration Tool.

Quit

This closes the migration window and stops the migration process. If the migration project is not saved, you are prompted to save the project.

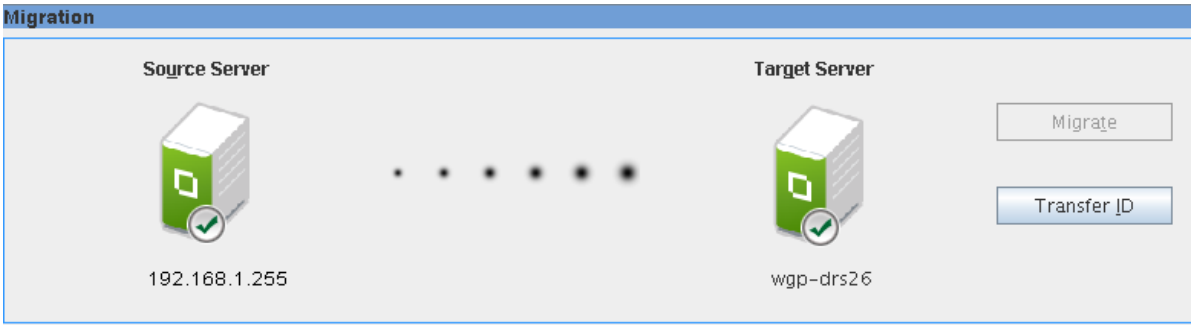
Whiteboard

This display instructions and tips to perform a successful migration.

Migration Pane

This is the top pane of the Migration Tool GUI.

Figure 2-8 *Top Pane*



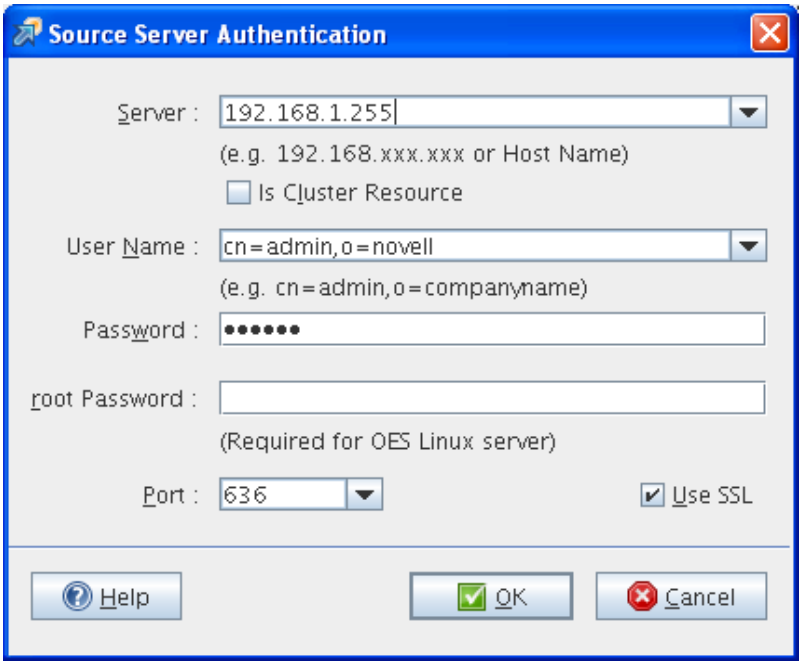
Use this pane to perform the following tasks:

- Authenticate the source server and target server credentials.
- Select the type of migration as Migrate or Transfer ID. The **Migrate** option is enabled only after configuring a service for migration. By default, only the Transfer ID option is enabled.

Authenticate Source Server and Target Server

Specify the credentials to authenticate the source server and target server.

Figure 2-9 *Source Server Authentication Screen*



1 In the **Server** field, specify the IP address or hostname of the source server.

The server IP, user name and port information is cached by the Migration GUI. When entering values in the **Server** or **User Name** field, Migration GUI auto-fills this information. To clear the cache entries, delete the entries from the `/opt/novell/migration/plugin/conf/migration.history` file.

(Optional) Is Cluster Resource: To migrate cluster volumes, specify cluster resource IP in the **Server** field and select the **Is Cluster Resource** option. If you select this option, only the file system and iPrint services are migrated. This option supports only Migrate scenario and does not support Transfer ID.

For example, use the NSS Cluster Pool IP to migrate NSS cluster volumes and use the iPrint cluster IP to migrate iPrint.

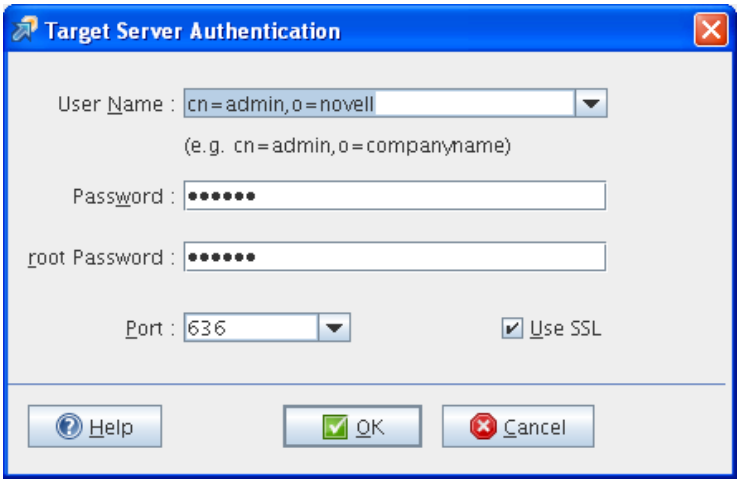
Use the node IP address for migrating other services.

2. In the **User Name** field, specify the FDN of the admin user of the source server. Use the LDAP (comma-delimited) format. For example, cn=admin,o=novell
3. In the **Password** field, specify the password for the admin user who is performing the migration.
4. If the source server is OES, specify the password for authentication in the **Root Password** field.
5. In the **Port** field, specify the port number to use for the SSL connection on the source server. By default, port 636 is used for the SSL connection and port 389 for the non-SSL connection.
6. (Optional) To use a secure connection for LDAP authentication, select **Use SSL**.
7. Click **OK** to authenticate the credentials on the source server.

In the Target Server Authentication dialog box there is no field available to specify the IP address or the hostname because the Migration Tool is launched from the target server.

If the source and target servers are in the same tree, the credentials on the target server are automatically populated when the credentials on the source server are authenticated.

Figure 2-10 *Target Server Authentication Screen*



1. Specify the credentials of the administrator of the target server.
2. Specify the root password.
3. (Optional) To use a secure connection for LDAP authentication, select **Use SSL**.
4. Click **OK**.

Type of Migration

On successful authentication of the source server and target server, the IP address or the DNS name of the servers are displayed below the server icons.

1 Depending on your requirements, select the migration type:

- **Migrate:** Select this option, if you want to consolidate the services from the source server into an already running instance of the service on the target server. The source server and the target server can be in the same eDirectory tree or a different eDirectory tree. This option is enabled only after configuring a service for migration.
- **Transfer ID:** Select this option to transfer the server identity of the source server to the target server. The source server and the target server must be in the same eDirectory tree.

2 To configure the services for migration, see "Services to Migrate Pane" on page 31

Services to Migrate Pane

This is the central pane. Use this pane to select the services that you plan to migrate, and configure the options. When multiple services are configured for migration, the order represents the sequence for migration of the services.

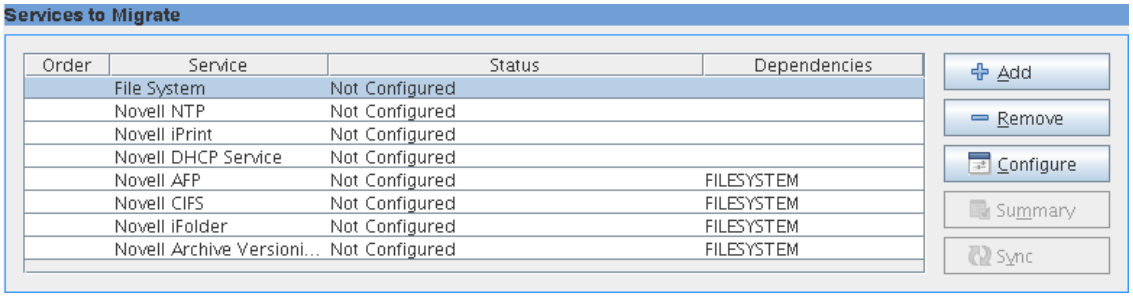
IMPORTANT: You must install all the services on the target server that you plan to migrate from the source server.

For a list of service migration chapters and their corresponding documentation, see the Part VII, "Service Migration," on page 147.

You use this pane to perform the following tasks:

- Select and configure services for migration.
- Synchronize the migrated service with the service on the source server.
- View the configuration summary of the service.

Figure 2-11 *Services to Migrate*

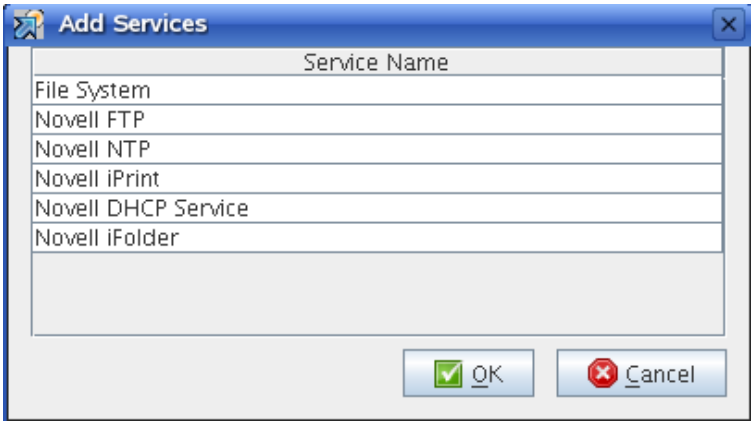


Options

- **Add:** The **Add Services** dialog box displays a list of services to be migrated to the target server. Services that are not installed on the target server prior to the migration are not listed.

NOTE: If the Source server is OES, the **Add Services** dialog box displays only File System and iPrint service. Only these two services can be migrated using GUI.

Figure 2-12 *List of Services to Migrate from NetWare Source Server*



- **Remove:** In the **Services to Migrate** pane, select the service you do not want to migrate and click **Remove**.
- **Order:** The number indicates the order in which each service migrates. The order is displayed by the migration tool and cannot be edited.
- **Service:** Lists the name of service to be migrated.
- **Status:** Displays the status of the service and last executed date and time of migration or synchronization of a service.

  The services can be in different states during migration:

State	Description
Not Configured	The service is not configured.
Password Required	Configuration of a service is not complete.
Ready	The service is configured and ready to migrate.
Migrating	The service is in the process of migration.
Migrated	The service is migrated to the target server.
Synced	The service on the target server is updated with the changes on the source server.

- **Dependencies:** Lists the dependent services to be migrated. The migration process progresses independently of whether the dependency is completed.
- **Configure:** Select the service to prepare for migration, then click **Configure**.
- **Sync:** This option is enabled when you are synchronizing the file system or CIFS services. The service details on the target server are compared with the source server and only the changed information is migrated to the target server. Select the service, then click **Sync**.
- **Summary:** A tree view that displays migration options configured for a selected service.

To select the services to migrate:

1. Click **Add** to display the list of services available for migration.
2. In the **Add Services** window, select the services to migrate, then click **OK**.

   In the **Status** column, the status of the unconfigured services is listed as **Not Configured**.
3. Select the service, then click **Configure** to configure the migration options.

   Details to configure and migrate the services are documented as an Appendix in this guide.

NOTE: The services are listed depending on the source operating system, support for different types of migration scenarios (Migrate and Transfer ID) and the services installed on the target server.

Migration Status

Displays the service status and logs.

- "Status" on page 33
- "Service Information" on page 33

Status

Displays the status of the selected service. If a service is in a migrating state, the progress of the migration is displayed.

State	Description
Ready	The service is configured and ready to migrate.
Precheck	The prerequisites and migration options configured for each service are validated.
Migrate	The service is in the process of migration.
Sync	The migrated service is being synchronized with the service on the source server.

Service Start Time: The date and the time when migration started for a specific service.

Service Elapsed Time: The execution time of service migration.

Remaining Time: The time remaining to complete migration of a service.

Project Start Time: The date and the time when migration started for a specific complete project.

Project Elapsed Time: The execution time of project migration.

Progress bar: The progress of migration for a service.

Service Information

The tree view displays the progress of migration and sync for each service.

Migrate - Tree View for All Services

Service State: The current state of migration for a service whether it is Ready, Precheck, Migrate or Sync.

Progress Status: The progress of migration for a service. For example, Successfully Completed

Migration Status: The status of migration for a service. For example, Complete

Migrate - Tree View for File System

Number of files/folders to migrate: The total number of files and folders on the source server that are to be migrated to the target server.

Number of files/folders migrated: The total number of files and folders successfully migrated to the target server.

Data to be migrated: The amount of data on the source server that is to be migrated to the target server.

Migrated data: The amount of data successfully migrated to the target server.

Trustee errors: The number of errors encountered when performing trustee migration. The error details are recorded in the `filesystem.log` file.

Total errors: The total number of errors encountered when performing migration. Click the link to display the service-specific log file.

Migration Start Time: The date and time when migration starts for a project.

Migration End Time: The date and time when migration is completed.

Sync - Tree View for All Services

Service State: The state of sync for a service.

Progress State: The progress of sync for a service.

Sync Status: The status of sync for a service.

Sync - Tree View for File System

Number of files/folders to sync: The total number of files and folders on the source server that are modified and need to be synced to the target server.

Number of files/folders synced: The total number of files and folders successfully synced to the target server.

Data to be synced: The amount of data on the source server that is to be synced to the target server.

Synced data: The amount of data successfully synced to the target server.

Trustee errors: The number of errors encountered when syncing trustees. The error details are recorded in the `filesystem.log` file.

Total errors: The total number of errors encountered when performing sync. Click the link to display the service-specific log file.

Number of files/folders deleted on target: The total number of files and folders that are deleted from the target server because those files and folders were deleted from the source server.

Sync Start Time: The date and time when synchronization of service starts for a project.

Sync End Time: The date and time when synchronization of services is completed.

3 What's New or Changed in the Migration Tool

This section describes enhancements and changes in the Migration Tool, beginning with the initial release Open Enterprise Server (OES) 2018.

- "What's New (OES 2018 SP3 Update 1)" on page 37
- "What's New (OES 2018 SP3)" on page 37
- "What's New (OES 2018 SP2 Update 6)" on page 37
- "What's New (OES 2018 SP2 Update 5)" on page 38
- "What's New (OES 2018 SP2)" on page 38
- "What's New (OES 2018 SP1 Update 12)" on page 38
- "What's New (OES 2018 SP1)" on page 38
- "What's New (OES 2018)" on page 38

What's New (OES 2018 SP3 Update 1)

The `[-d] or [--delete]` option is available for `migcred` command to delete the credentials of an identity with `migcred` command. For more information, see "migcred" on page 138.

What's New (OES 2018 SP3)

In addition to the bug fixes, migration tool provides the following enhancements and changes in OES 2018 SP3.

File System Migration Commands

The `--use-casa` option is available to store and retrieve usernames and passwords from the OES Credential Store. For more information, see "File System Migration Commands" on page 125.

What's New (OES 2018 SP2 Update 6)

The `[-d] or [--delete]` option is available for `migcred` command to delete the credentials of an identity with `migcred` command. For more information, see migcred.

What's New (OES 2018 SP2 Update 5)

File System Migration Commands

The `--use-casa` option is available to store and retrieve usernames and passwords from the OES Credential Store. For more information, see File System Migration Commands.

Version Upgrade

- eDirectory version is upgraded to 9.2.4.1
- iManager version is upgraded to 3.2.4.1

What's New (OES 2018 SP2)

Migration Tool in OES 2018 SP2 has been modified for bug fixes. There are no new features or enhancements in OES 2018 SP2.

What's New (OES 2018 SP1 Update 12)

File System Migration Commands

The `--use-casa` option is available to store and retrieve usernames and passwords from the OES Credential Store. For more information, see "File System Migration Commands" on page 125.

What's New (OES 2018 SP1)

Migration Tool in OES 2018 SP1 has been modified for bug fixes. There are no new features or enhancements in OES 2018 SP1.

What's New (OES 2018)

Migration Tool in OES 2018 has been modified for bug fixes. There are no new features or enhancements in OES 2018.

II Getting Started

- Chapter 4, “Planning for Migration,” on page 41
- Chapter 5, “Using the Migration Tool GUI,” on page 45
- Chapter 6, “Troubleshooting Issues,” on page 49

4 Planning for Migration

The following topics are discussed in this section:

- "Prerequisites" on page 41
- "Preparing the Source Server for Migration" on page 42
- "Preparing the Target Server for Migration" on page 42
- "Installing and Accessing the Migration Tool" on page 43
- "What's Next" on page 43

Prerequisites

- "Source Server Requirements" on page 42
- "Target Server Requirements" on page 42
- "Unsupported Target Platforms" on page 42

The Migration Tool is installed as part of the Open Enterprise Server (OES) 2018 SP3 installation. The source server and the target server must meet the requirements outlined in this section.

- ❒ **Platform Support for the Source Server:**
  - OES 2018 SP3
  - OES 2018 SP2
  - OES 2018 SP1
  - OES 2018
  - OES 2015 SP1
  - OES 2015
  - OES 11 SP3
  - OES 11 SP2
  - OES 2 SP3 Linux on SLES 10 SP4
  - NetWare 6.5 SP8 and eDirectory 8.7.3.*x* or later
- ❒ **Platform Support for the Target Server:**
  - OES 2018 SP3
- ❒ **Time Synchronization:** The source and target servers must be using the same time synchronization method. For more information on time synchronization, see "Time Services" in the *OES 2018 SP3: Planning and Implementation Guide*.

Source Server Requirements

The source server contains the files, volumes, and eDirectory objects that are to be copied to the target server.

- ❒ The source server must be running supported versions of NetWare or OES and eDirectory.
- ❒ Update the source server with the latest NetWare and OES Support Pack.
- ❒ Ensure that the user performing the migration has read/write/access rights on the source server.

Target Server Requirements

- ❒ Ensure that the user performing the migration has read/write/access rights on the target server.

Unsupported Target Platforms

OES does not support the following as Migration Tool target server:

- Novell Open Workgroup Suite - Small Business Edition

Preparing the Source Server for Migration

1. Shut down any applications, products, or services (virus scan software, backup software, etc.) running on the server to be migrated.
2. Verify the health of eDirectory by loading DSRepair with the following three options:
   - Unattended Full Repair
   - Time Synchronization
   - Report Synchronization Status

   If errors are reported, resolve them before attempting migration.
3. (Recommended) Back up eDirectory data and trustees on the source server, even though the source data is not modified during migration.

   For information on creating a backup of eDirectory, see Backing Up and Restoring eDirectory in the *NetIQ eDirectory Administration Guide*.
4. Remove any unnecessary applications, then delete and purge unused files and folders.
5. Ensure that all the latest patches are installed.

Preparing the Target Server for Migration

1. Back up the eDirectory information on the target server.

   For information on creating a backup of eDirectory, see "Backing Up and Restoring NetIQ eDirectory" in the *NetIQ eDirectory Administration Guide*.
2. Make sure that you have installed and configured the services that you are migrating from the source server.

IMPORTANT: If a service is not available on the target server, it is not listed in the Migration Tool GUI.

Installing and Accessing the Migration Tool

The Migration Tool is automatically installed with the OES 2018 SP3 (target server) server in the `/opt/novell/migration/sbin` folder. We recommend you to set the screen resolution to 1024X768 before launching the Migration Tool GUI.

Log in as the `root` user and use one of the following methods to access the Migration Tool on your target server:

- **Desktop:** Click **Applications > Other > Novell Migration Tools**.
- **Console:** At the terminal prompt, enter:

  ```
  miggui
  ```

What's Next

To get started with the Migration Tool GUI, see "Using the Migration Tool GUI" on page 45.

5 Using the Migration Tool GUI

This section describes how to migrate data from supported source server version to an OES 2018 SP3 server.

After you have completed the prerequisite procedures in Chapter 4, “Planning for Migration,” on page 41, you are ready to perform migration. To do this, complete the following tasks in the order they are listed:

- “Getting Started” on page 45
- “Launch the Migration Tool Utility” on page 45
- “Migration Process” on page 45

Getting Started

The Migration Tool is automatically installed with OES 2018 SP3 in the `/opt/novell/migration/sbin` folder.

IMPORTANT: To perform migration, you must be a `root` user and an eDirectory administrator.

Launch the Migration Tool Utility

We recommend you to set the screen resolution to 1024X768 before launching the Migration Tool GUI.

Log in as the `root` user and use one of the following methods to access the Migration Tool on your target server:

Desktop: Click **Applications > Other > Novell Migration Tools**.

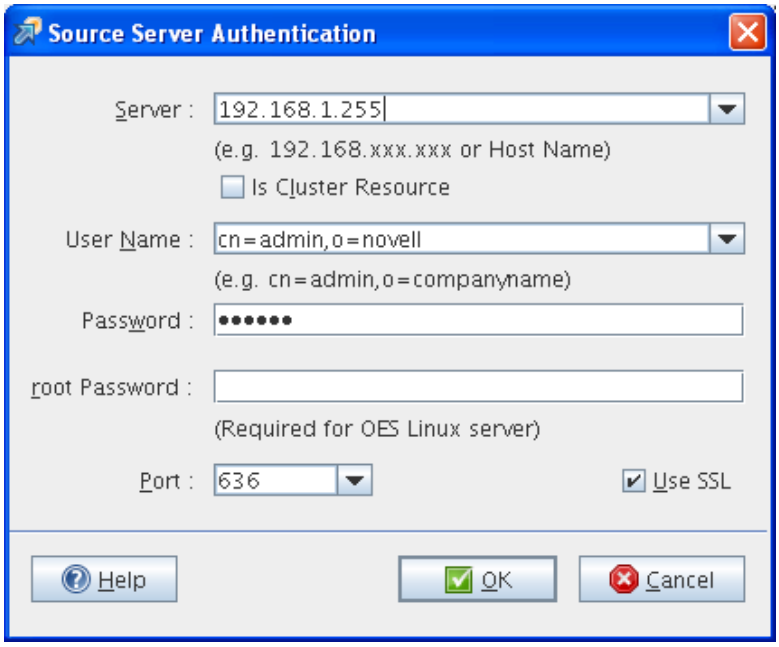
Console: At the terminal prompt, enter:

```
miggui
```

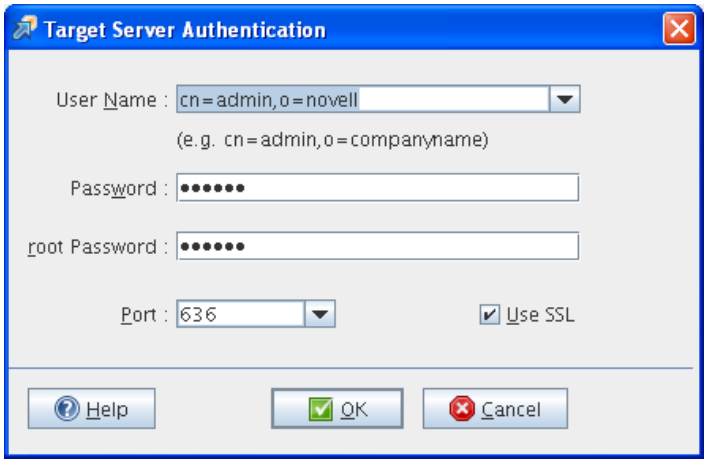
Migration Process

1. Launch the Migration Tool.
2. Do one of the following to create, open, or save the migration project:
   - To create a new migration project, click **New Project**, specify the name of the project, then click **OK**.
   - To open an existing project, click **Open Project**, then select the project and click **Open**. When a confirmation message to open the project is displayed, click **Yes**.
   - To save a project, click **Save Project > Yes**.

3 Specify the credentials of the source server, then click **OK**.



4 Specify the credentials of the target server, then click **OK**.



5 Depending on your requirements, select the migration type:

- Migrate: To perform migration, see Chapter 7, “Preparing for Server Migration,” on page 53
- Transfer ID: To perform a Transfer ID, see Part IV, “Transfer ID Migration,” on page 59.

6 In the **Services to Migrate** pane, select the services to migrate from the source server to the target server.

Only the services installed on the target server are listed for migration.

6a To display the list of services for migration, click **Add**.

6b In the **Add Services** window, select the services to migrate, then click **OK**.

7 Select the service for which you want to configure the migration options, then click **Configure**.

8 Click **Migrate** to proceed with migration. The status of the service changes to **Migrating**.

In **Status** > **Service Status**, you can view the progress of migration. When the migration is complete, the status of the service changes to **Migrated**.

In **Status > Service Information,** the tree view displays the progress of migration for each service. The **Trustee errors** and **Total errors**, displays the number of error encountered on performing migration. Click **Total errors** to view the service-specific log file.

6 Troubleshooting Issues

- "Source Server Authentication Fails in an Cluster Environment" on page 49
- "Clear User Name Entries Populated in the Source or Target Authentication Screen" on page 49
- "Unable to Authenticate to Source or Target Server Using Non-SSL Option" on page 49
- "Target Server Authentication Fails or Unable to Browse the eDirectory Tree in the Migration GUI" on page 50
- "The Authentication Dialog Box is Blank" on page 50

Source Server Authentication Fails in an Cluster Environment

If NCS is configured after OES configuration, then SMS is not registered with NCS. This causes authentication failure of the source server if the **IS Cluster Resource** option is selected.

To resolve this issue, restart SMDR or unload and load TSA components of SMS, then autheticate to the source server.

Clear User Name Entries Populated in the Source or Target Authentication Screen

The server IP, user name and port details provided in the Source Server Authentication screen and the Target Server Authentication screen is cached by the Migration GUI. When entering a user name the values are auto-filled by the Migration GUI; to clear these cache entries, delete the MIGFW_SOURCE_USERNAME and MIGFW_TARGET_USERNAME entry from the `/opt/novell/migration/plugin/conf/migration.history` file.

Unable to Authenticate to Source or Target Server Using Non-SSL Option

In the Source Server Authentication screen or the Target Server Authentication screen, if the **Use SSL** option is not selected, then authentication to the server fails.

- If you do not want to use a secure connection, deselect the **Use SSL** option.

  When this option is not selected, you must ensure that TLS is disabled for LDAP on the source server. Using iManager > **LDAP** > **LDAP Options** > **LDAP Group-server_name** > **Authentication Options** and deselect **Require TLS for Simple Binds with Password**.

- To use a secure connection, select the **Use SSL** option (default setting).

  When this option is selected, you must ensure that TLS is enabled for LDAP on the source server. Using iManager > **LDAP** > **LDAP Options** > **LDAP Group-server_name** > **Authentication Options** and select **Require TLS for Simple Binds with Password** (it is selected by default).

Target Server Authentication Fails or Unable to Browse the eDirectory Tree in the Migration GUI

Description: If you execute the Migration GUI on a new OES 2018 SP3 server, the target server authentication fails or the **Services** panel is unable to display eDirectory objects on browsing the tree or LDAP secure bind fails displaying an empty eDirectory tree.

The Migration Tool creates a private Java certificate store on first-time authentication to the target server. This store is used by Java Security Provider for all the SSL communications. When you launch the Migration Tool for the first time, the keystore does not exist, the LDAP bind fails during authentication or when performing an eDirectory search.

Action: The error is resolved on performing the following steps:

1. Save the migration project.
2. Close the Migration Tool GUI.
3. Start the Migration Tool GUI.
4. Start the migration project saved in Step 1.
5. Configure the service.

   eDirectory objects are now available in the service GUI.

The Authentication Dialog Box is Blank

Description: When you switch from a desktop or any window to the Source Server Authentication or the Target Server Authentication dialog box, the Migration Tool displays a blank authentication dialog box.

This is an issue that occurs randomly. The authentication details are not lost, but you see a blank dialog box.

Action: Close the dialog box and open it again. All the details in the authentication dialog box are retained.

III Server Consolidations

- Chapter 7, “Preparing for Server Migration,” on page 53
- Chapter 8, “Using the Migration GUI Tool,” on page 55

7 Preparing for Server Migration

To prepare your source server and target server for migration, complete the tasks in the following sections:

- "Prerequisites" on page 53
- "Migration Support Matrix" on page 53

Prerequisites

- Ensure that the source server and target server are running with the supported versions of the NetWare, or Linux server software. For more information, see "Support Matrix for NetWare and OES Services" on page 18.
- The target must be running Open Enterprise Server (OES) 2018 SP3 with the following components enabled:
  - NetIQ eDirectory
  - NCP Server for Linux
  - Storage Management Services (SMS)

For more information on installing and configuring OES, see the *OES 2018 SP3: Installation Guide*.

Migration Support Matrix

To migrate a service, you must select the Migrate scenario. Depending on the service, the Migrate scenario either migrates or consolidates the service.

The Table 7-1 explains the behavior of the service on selecting the Migrate scenario.

- **Overwrites the existing configuration:** The service configuration on the target server is overwritten with the service configuration from the source server.
- **Append to existing configuration:** The service configuration on the target server is appended with the service configuration from the source server.

Table 7-1 *Support Matrix*

Services	Migrate		Details
	Overwrites the existing configuration	Append to the existing configuration	
AFP	No	Yes	"Migration Scenarios" on page 155

Services		Migrate	Details
CIFS	CIFS configuration	◆ Shares ◆ Context	“Migrate - Same Tree” on page 162
DHCP	No	Yes	“Consolidation” on page 182
FTP	Yes	No	“Migration Scenarios” on page 199
iPrint	No	Yes	“Supported Migration Scenarios” on page 206
NTP	No	Yes	“Migration Scenarios” on page 239

8 Using the Migration GUI Tool

After you have completed the general prerequisites in Chapter 4, “Planning for Migration,” on page 41 and prerequisite procedures in Chapter 7, “Preparing for Server Migration,” on page 53, you are ready to migrate the source server. To do this, complete the following tasks in the order they are listed:

- “Launch the Migration Tool Utility” on page 55
- “Create the Project File” on page 56
- “Select the Source Server, Target Server, and Migration Type” on page 57
- “Configure the Services” on page 58
- “Run the Migration” on page 58

Launch the Migration Tool Utility

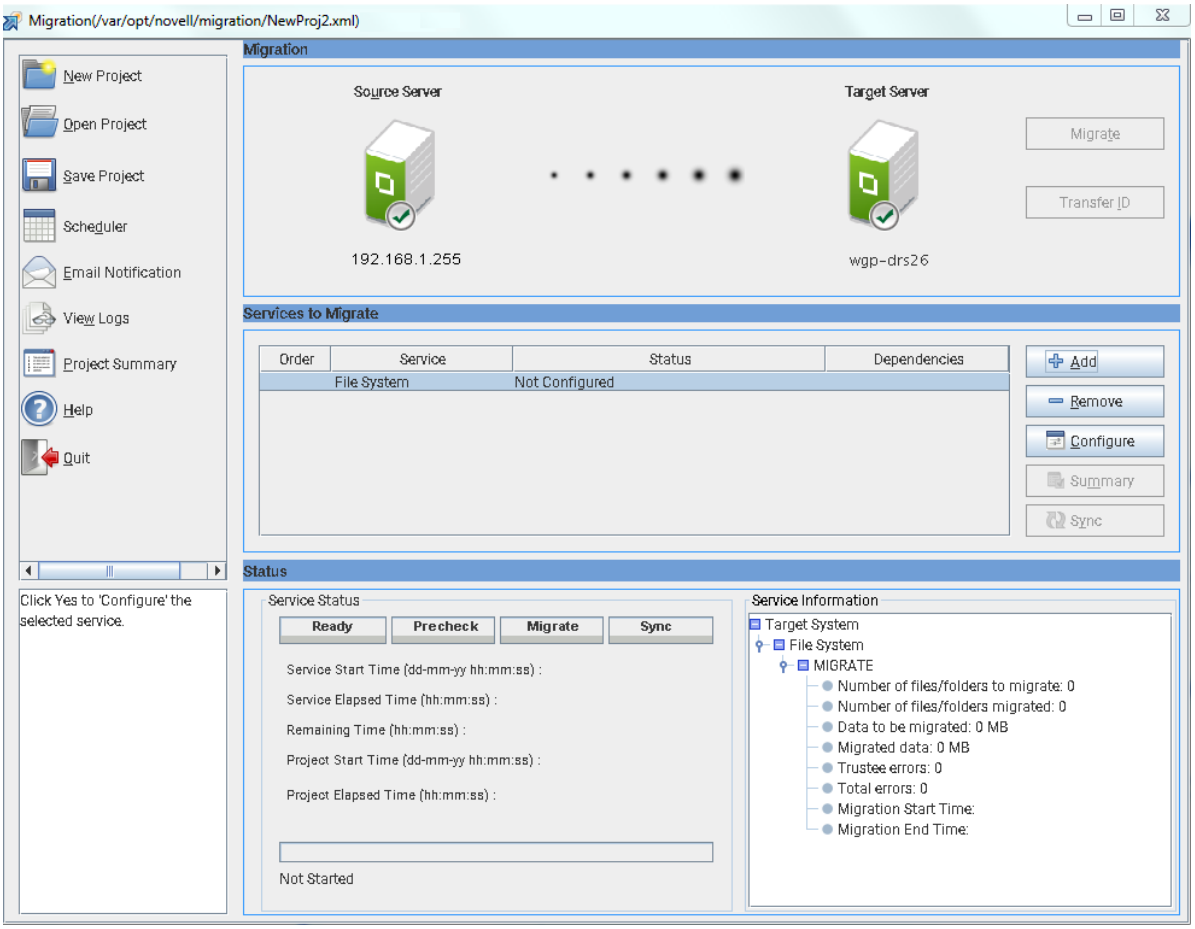
Log in as the `root` user and use one of the following methods to access the Migration Tool on your target server:

Desktop: Click **Applications > Other > Novell Migration Tools.**

Console: At a terminal prompt, enter

```
miggui
```

Figure 8-1 *Migration Tool GUI*



Create the Project File

1 To create a new migration project, click **New Project**. Type the path to the project in the **Location** field or browse to the location and click **Save**.

The filename can include any character except \ *? < > | " /. The project name also serves as the project's folder name, so you might want to keep it short. The project folder stores the log files and other files associated with the project.

or

To open an existing migration project, click **Open Project**. Browse to the project and click **Open**.

For example, `/home/Carla/migration/mig.xml`

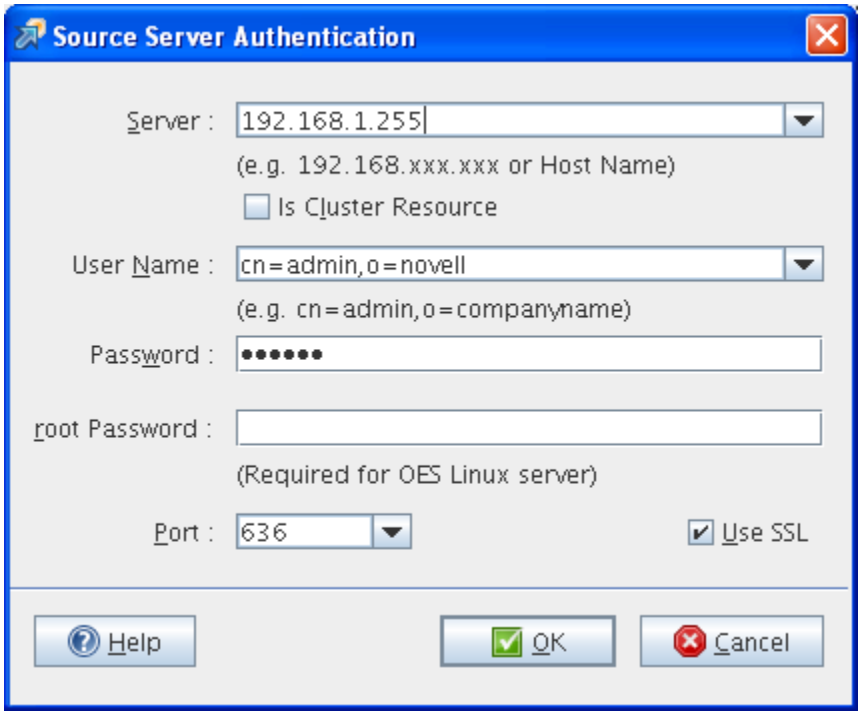
2 (Conditional) If you want to store the project file in a location other than the default location provided, click **Browse** and navigate to the desired location, then click **OK**.

3 Continue with "Select the Source Server, Target Server, and Migration Type" on page 57.

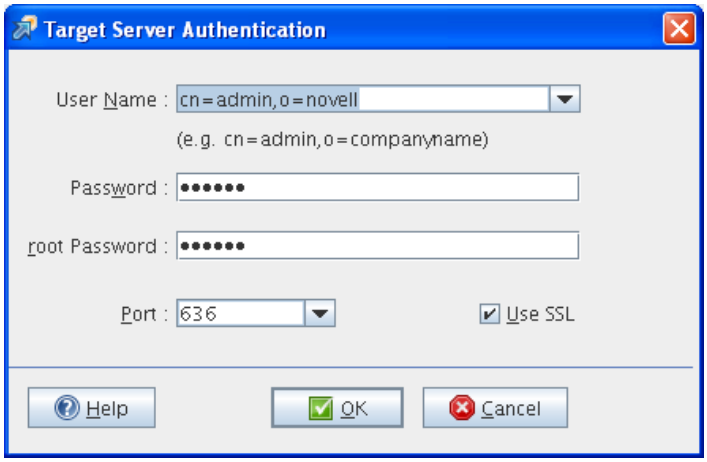
Select the Source Server, Target Server, and Migration Type

Specify the credentials to authenticate the source server and target server.

1 Specify the source credentials and click **OK**.



2 Specify the target server credentials and click **OK**.



On successful authentication, both the servers change to green.

3 You must configure a service to enable the **Migrate** button. Continue with "Configure the Services" on page 58.

4 Click **Migrate**.

Configure the Services

1 In the **Services to Migrate** panel, click **Add** and select the services to migrate to target server.

The **Status** of the services is **Not Configured**.

2 Select the service to configure for migration, then click **Configure**.

On successful configuration, the **Status** of the service changes to **Ready**.

IMPORTANT: Before you proceed with migration, ensure that you have met all the prerequisites and configured the migration options for all the services that are to be migrated to the target server.

For a list of service migration chapters and their corresponding documentation, see *Part VII, "Service Migration," on page 147*.

---

3 Continue with "Run the Migration" on page 58.

Run the Migration

1 Click **Migrate** to proceed with migration.

You can view the service-specific status of the migration or the status of the overall migration:

- In the **Status** > **Service** Status tab, you can view the progress of migration. On completion of migration, the **Status** of a service changes to **Migrated**.
- In the **Status** pane > **Service Information** tab, you can view the tree view of services migrating to the target system. A message **Migration completed for all Services** is displayed on completion of the migration.

NOTE: If you encounter any errors during migration, click **View Logs** in the left pane. After resolving the errors, execute the migration procedure again.

IV Transfer ID Migration

- Chapter 9, “Preparing for Transfer ID,” on page 61
- Chapter 10, “Using the Migration GUI Tool for Transfer ID,” on page 65
- Chapter 11, “Using Migration Commands for Transfer ID,” on page 73
- Chapter 12, “Running Transfer ID Remotely,” on page 83
- Chapter 13, “Post Transfer ID Migration,” on page 85
- Chapter 14, “Troubleshooting Issues,” on page 89

9 Preparing for Transfer ID

To prepare your source server and target server for a Transfer ID project, complete the tasks in the following sections:

- "Prerequisites" on page 61
- "Preparing the Source Server for Migration" on page 62
- "Preparing the Target Server for Migration" on page 62
- "Preparing Source and Target Server in an Active Directory Environment" on page 63

Prerequisites

- Ensure that the source server and target server are running supported versions of NetWare or Linux server software. For more information, see "Support Matrix for NetWare and OES Services" on page 18.
- To perform transfer id using container admin, the container admin must have supervisory rights on the container he/she exists.
- The source server and the target server must be in the same eDirectory tree.
- The source and target server must be in the same subnet and gateway.
- The source server can either be a replica or a non-replica server in the eDirectory tree.
- The target server must be a non-replica server in the eDirectory tree.

  To make the target server as a non-replica server, select the **OES Pre-migration Server** option while installing OES 2018 SP3 on the target server.
- Verify the health of eDirectory by executing the `ndsrepair` command on Open Enterprise Server with the following three options:
  - Unattended Full Repair, execute the command: `ndsrepair -U`
  - Time Synchronization, execute the command: `ndsrepair -T`

    The target server must be time synchronized with the source server. Time across all the servers in the replica ring should be synchronized.

    For more information on time synchronization, see "Time Services" in the *OES 2018 SP3: Planning and Implementation Guide*.

    NOTE: The `ndsrepair` command locks the eDirectory database, and this results in failure of the Transfer ID migration. You must ensure that all the eDirectory operations are complete before performing a Transfer ID migration.

  - Report Synchronization Status, execute the command: `ndsrepair -E`

    All the eDirectory replicas are synchronized.

  For more information about DSRepair command, see DSRepair Options in the NetIQ eDirectory Administration Guide

If any errors are reported, resolve them before attempting migration.

- Ensure that the names and properties of the NSS pools and volumes on the target server are the same as on the source server.
- Ensure that all the eDirectory replicas are up and working in the current partition; otherwise, eDirectory migration cannot be completed successfully.
- Ensure that the hostname and IP address of source server and target server are mapped correctly. The `/etc/hosts` file on the source server must contain correct entries for resolving source server's DNS hostname to IP address.

Preparing the Source Server for Migration

- Shut down any applications, products, or services (virus scan software, backup software, etc.) running on the server to be migrated.
- (Recommended) Back up all the data of the source server, even though the source server data is not modified during migration.

  For information on creating a backup of eDirectory, see Backing Up and Restoring eDirectory in the *NetIQ eDirectory Administration Guide*.

  You must back up the data and trustee of the source servers,
- Remove any unnecessary applications, then delete and purge unused files and folders. Files that are deleted from the source server prior to migration are not migrated to the target server.
- Ensure the NetWare server has a valid license. If Transfer ID is performed on the NetWare server with evaluation license, then it might fail due to insufficient user connections.
- If the source server is supported OES platform, enable the SSH service. Ensure you have copied the SSH keys to avoid multiple password prompts on execution of the **DIB Copy** step. For more information, see Step 1a on page 68.
- If the source server is NetWare, ensure to comment the line, “LOAD DSMETER” in the `SYS:\SYSTEM\autoexec.ncf` file and restart the NetWare server before performing Transfer ID.
- Ensure that the `/root/.ssh/known_hosts` file contains the entries of both the hostname and its corresponding IP address.

On successful Transfer ID, the identity of the source server is transferred to the target server container.

Preparing the Target Server for Migration

- Make sure that the **OES Pre-migration Server** option is selected for the target server.

  When you install OES 2018 SP3 on the target server for a Transfer ID migration and you reach the Software Selection window, you must select the **OES Pre-migration Server** option. This prepares eDirectory for the Transfer ID migration that you will perform later.

  IMPORTANT: Select the **OES Pre-migration Server** option at the start of OES 2018 SP3 installation; otherwise, an eDirectory replica is installed on the server and it cannot be the target server for Transfer ID migration. If the target server already has OES 2018 SP3 installed,

without the **OES Pre-migration Server** option selected, then selecting this option later does not prepare the target server for Transfer ID migration until you reinstall OES 2018 SP3 and select this option.

- Install the services that you need to migrate from the source server.

  If a service is not installed on the target server, it is not listed in the Migration Tool GUI screen for migration. This is a mandatory requirement.
- Back up the eDirectory information on the target server. For information on creating a backup of eDirectory, see Backing Up and Restoring eDirectory in the *NetIQ eDirectory Administration Guide*.
- If the source server is a VLDB replica, then the target server also must be a VLDB replica.

NOTE: Each DFS management context allows maximum of two VLDB replicas. If your setup has a source server and a non-target server as a VLDB replica, then you must ensure to remove the non-target server as VLDB replica and make the target server as a new VLDB replica.

Preparing Source and Target Server in an Active Directory Environment

In addition to the Transfer ID prerequisites, ensure to meet these specific prerequisites in an Active Directory environment.

Table 9-1 *Transfer ID Support Matrix in Active Directory Scenario*

Source Server	Target Server	Source Platform Support	Target Platform Support	Migration Support
NSS AD configured	NSS AD configured	OES 2015 or later	OES 2018 SP3	Supported
NSS AD configured	Only eDirectory	OES 2015 or later	OES 2018 SP3	Not Supported You can leave the AD domain and perform Transfer ID. Post-Transfer ID rejoin the domain.
Only eDirectory	NSS AD configured	Supported OES platform	OES 2018 SP3	Not Supported You can leave the AD domain and perform Transfer ID. Post-Transfer ID rejoin the domain.

Source Server and Target Server are Configured With NSS AD

- The source server must be configured with OES 2015 or later.

- The target server must be configured with OES 2018 SP3.
- The source server and target server must join to the same Active Directory domain. For more information on joining to an Active Directory domain, see Installing and Configuring NSS AD Support in the OES 2018 SP3: NSS AD Administration Guide.

During the **eDirectory Precheck** step, the source server's files `/etc/krb5.conf`, `/etc/krb5.keytab`, `/etc/resolv.conf`, and `/etc/opt/novell/nit/nitd.conf` are copied to the target server. In the **Repair** step, the target server's `krb5.conf`, `krb5.keytab`, `resolv.conf` files are replaced with the backed up source server files. The target server's `nitd.conf` file is merged with the backed up source server's `nitd.conf` file.

On successful Transfer ID, the target server will leave the Active Directory domain and the source server computer domain object will be used.

Source Server is Configured with NSS AD and Target Server is not in an AD environment

- The source server must be configured with OES 2015 or later.
- The source server must leave the AD domain. For more information, see --leave-domain in the OES 2018 SP3: NSS AD Administration Guide.

Post-Transfer ID, you must join the target server to the AD domain. For more information, see Installing and Configuring NSS Active Directory Support in the OES 2018 SP3: Installation Guide or --join in the OES 2018 SP3: NSS AD Administration Guide.

Source Server is not in an AD environment and Target Server is Configured with NSS AD

- The target server must be configured with OES 2018 SP3.
- The target server must leave the AD domain. For more information, see --leave-domain in the OES 2018 SP3: NSS AD Administration Guide.

Post-Transfer ID, you must join the target server to the AD domain. For more information, see Installing and Configuring NSS Active Directory Support in the OES 2018 SP3: Installation Guide or --join in the OES 2018 SP3: NSS AD Administration Guide.

10 Using the Migration GUI Tool for Transfer ID

After you have completed the prerequisite procedures in Chapter 9, “Preparing for Transfer ID,” on page 61, you are ready to migrate the source server. To do this, complete the following tasks in the order they are listed:

- “Understanding Transfer ID GUI” on page 65
- “Launch the Migration Tool Utility” on page 66
- “Create the Project File” on page 66
- “Select the Source and Target Server and the Migration Type” on page 67
- “Configure the Services and Run Migration” on page 67
- “Run Transfer ID” on page 68

Understanding Transfer ID GUI

The Transfer ID GUI runs a series of tasks for transferring the server identity of the source server to the target server. The identity of the server is made up of its IP address, hostname and the eDirectory DIB information from the source server.

On successful completion of the Transfer ID migration, the target server functions with the identity of the source server and source server goes offline.

The interface is divided into a left pane and right pane, and each task is associated with an icon that represents the status of the task.

- “Left Pane” on page 65
- “Right Pane” on page 66

Left Pane

The left pane lists a series of tasks to be completed for successful completion of Transfer ID. Each task is associated with an icon.

Table 10-1 *Status Icons*

Icon	Description
	The task is not yet started.
	The task is in progress.
	The task is complete.

Icon	Description
	Errors must be resolved before proceeding with the next step. An error is displayed in the **Errors** text box.
	You can choose to skip this task in the GUI and perform it manually.

Right Pane

- **Task Description:** A description of the task in progress. The **Command Executed** field displays the command executed to perform the task.
- **Errors:** A description of the error or warnings and a possible resolution. If no resolution is provided, you can find more information in the Novell Error Code online documentation (http://www.novell.com/documentation/lg/nwec/index.html).
- **Log Messages:** Log messages for each executed tasks and the overall Transfer ID.
- **Send E-mail Notification:** Select this option to receive an e-mail for a main task. An e-mail is sent only if you have already configured the **Email Notification** tab in the main Migration GUI screen. E-mail is not sent for suggests.
- **Ignore:** Ignores a task and proceeds with the next task.
- **Back:** Click **Back** to re-execute a task.

  IMPORTANT: When the current task is executed, the changes are committed, using **Back** on a completed task does not roll back the changes.

- **Next:** Click **Next** to complete the current task and move to the next task.
- **Cancel:** Click **Cancel** to close the Transfer ID Wizard and quit the task.

  IMPORTANT: The Transfer ID process is canceled, but changes or steps executed earlier are not rolled back.

Launch the Migration Tool Utility

Log in as the `root` user and use one of the following methods to access the Migration Tool on your target server:

Desktop: Click **Applications > Other > Novell Migration Tools.**

Console: At a terminal prompt, enter

```
miggui
```

Create the Project File

1. To create a new migration project, click **New Project**. Type the path to the project in the **Location** field or browse to the location, then click **Save**.

The filename can include any characters except * ? < > | " /. The project name also serves as the project's folder name, so you might want to keep it short. The project folder stores the log files and other files associated with the project.

or

To open an existing migration project, click **Open Project**. Browse to the project and click **Open**.

For example, `/home/Carla/migration/mig.xml`

2 (Conditional) If you want to store the project file in a location other than the default location provided, click **Browse** and navigate to the desired location, and then click **OK**.

Select the Source and Target Server and the Migration Type

Specify the credentials to authenticate the source server and target server.

1 Specify the source credentials, then click **OK**.

If the **Is Cluster Resource** option is selected, Transfer ID scenario is not available.

2 Specify the target server credentials, then click **OK**.

On successful authentication, both the servers change to green.

3 You can either migrate all the services to the target server and then transfer the NetWare or OES server's identity, or only transfer NetWare or OES server's identity to the target server.

3a To migrate services, continue with "Configure the Services and Run Migration" on page 67.

3b To transfer the NetWare or OES server's identity, click the **Transfer ID** button.

3b1 Click **Yes** to perform identity transfer without migrating the services.

3b2 Click **No** to configure and migrate services, refer to "Configure the Services and Run Migration" on page 67.

Configure the Services and Run Migration

1 In the **Services to Migrate** panel, click **Add** and select the services to migrate to target server.

The **Status** of the services is **Not Configured**.

2 To configure a service for migration, click **Configure**.

On successful configuration the **Status** of the service changes to **Ready**.

NOTE: Before you proceed with migration, ensure that you have met all the prerequisites and configured the migration options for all the services that are to be migrated to the target server.

For a list of service migration chapters and their corresponding documentation, see the Part VII, "Service Migration," on page 147.

---

3 Click **Migrate** to proceed with migration.

The **Status** pane displays service-specific migration progress. On completion of migration, the **Status** of a service changes to **Migrated**.

If you encounter any errors during migration, click View **Logs** in the left pane. After resolving the errors, execute the migration procedure again.

In the **Status** pane, **Service Information**, you can view the progress of overall migration. A message **Migration completed for all Services** is displayed on completion of migration.

4 (Optional) We recommend you to complete synchronization of the services before proceeding for Transfer ID.

5 (Optional) Back up the eDirectory database and NICI keys. For more information, see "Backup eDirectory Database and NICI Keys" on page 81.

6 Check the status of the migration. If migration is successful, then perform Transfer ID either by using GUI or CLI.

- To launch the Transfer ID GUI, click **Transfer ID**. For more information on performing the steps in the GUI, see "Run Transfer ID" on page 68.
- To use the command line, see Chapter 11, "Using Migration Commands for Transfer ID," on page 73.

Run Transfer ID

Ensure that you have completed the following:

- All the services you need to migrate must be configured on the target server.
- Ensure that all eDirectory processes (such as eDirectory repair) are completed before performing the Transfer ID scenario. The Transfer ID process locks the DIB (eDirectory database) on the source server and no operations can be performed.
- Back up the eDirectory database. For more information, see "Backup eDirectory Database and NICI Keys" on page 81.

IMPORTANT: Some of the steps for Transfer ID need to be performed manually. The GUI displays messages to ensure that you have completed the manual step. When the manual steps are completed, click **OK** to proceed to the next step. If you skip the manual steps, errors are encountered in the subsequent steps.

The Transfer ID GUI displays tasks you perform to complete the identity transfer.

1 **eDirectory Precheck:** Click **Next**.

The eDirectory Precheck step can be executed multiple times to verify the health of the eDirectory tree. Executing this step does not modify the source server and target server.

On successful completion of this step, the icon adjacent eDirectory Precheck changes to a green check mark.

1a (Conditional) If the source server is supported version of OES, ensure that you have copied the SSH keys to avoid multiple password prompts on execution of this step.

1a1 Enable SSH on the source server and the target server.

1a2 Enter the `# ssh-keygen -t rsa` command on the target server.

1a3 When you are prompted to enter the file in which to save the key (`/root/.ssh/id_rsa`), press Enter.

The ssh keys are stored in the default location.

1a4 When you are prompted to enter the passphrase (empty for no passphrase), press Enter.

We recommend that you do not include the passphrase.

1a5 Copy the key value (the output of the `# ssh-keygen -t rsa` command) to the source server.

```
# scp ~/.ssh/id_rsa.pub root@<source-server>:/root/
```

where <source-server> is the IP address or the hostname of the source server.

1a6 Log on to source server by using `ssh`. If the `.ssh` directory is not available, create the directory, then append the key value to the list of authenticated keys.

```
cat id_rsa.pub >> /root/.ssh/authorized_keys
```

2 Preparation: Click **Next**.

The Preparation step removes eDirectory from the target server. The LUM association with the groups and users is no longer available because the Unix Workstation object is also removed.

This step fails to execute if the prerequisites are not met.

Source Server and Target server in Active Directory environment: If the source server and target server are in Active Directory environment, additional Domain Authentication screen is displayed. You must specify the credentials to authenticate to the Active Directory server.

- **Domain Name:** Specify the Active Directory domain name that the OES server is joined to.
- **Administrator Name:** Specify the user name that can be used for the domain join operation. This user should have the following privileges: rights to reset password, create computer objects, delete computer objects, and read and write the `msDs-supportedEncryptionTypes` attribute.
- **Password:** Specify the password of the user who is used for the domain join operation.
- **Port:** Specify the port number for the SSL connection on the Active Directory server. By default, port 636 is used for the SSL connection and port 389 for the non-SSL connection.
- **Use SSL:** Select this option to perform Transfer ID by using the SSL connection.

3 DIB Copy: Click **Next.**

The DIB Copy creates a eDirectory DIB (Directory Information Base) copy of the source server on to the target server.

On completion of this step, the source server's DIB is locked and further operations are not permitted on the source server. The eDirectory database and the NICI files are copied to the target server.

IMPORTANT: This command fails to execute if the replica ring is not in sync, or the time is not synchronized among all the servers in the replica ring.

The eDirectory database on the source server is locked. The eDirectory database and the NICI files are copied to the target server.

---

4 Shutdown Source: Click **Next** to manually shut down the source server and disconnect it from the network.

4a You are prompted to confirm that the source server is shut down. Click **OK** and proceed with the next step, or click **Cancel** and shutdown the source server.

5 DIB Restore: Click **Next** to restore the eDirectory database that was backed up from the source server in Step 3 on page 69 on the target server. This includes the NICI keys and the eDirectory related information.

WARNING: If the backup in Step 3 on page 69 was not successful, the **DIB Restore** step fails. A failure at this point might cause the target eDirectory server to be unusable.

6 **IP Change:** Click **Next** to change the IP address of the services and their configuration files on the target server to the source server IP address.

IMPORTANT: Failure of the script to change the IP address, or terminating the operation manually, might cause the system to hang. For more details, refer to Chapter 14, "Troubleshooting Issues," on page 89.

If you are executing the Migration GUI by using a remote session, the Transfer ID wizard hangs and fails to proceed. For more information, refer Chapter 12, "Running Transfer ID Remotely," on page 83.

- **System:** The target server IP address is overwritten with the source server IP address.
- **Services:** The configuration files of the migrated services are assigned with the new IP address of the target server.
- **Others:** The IP address change scripts located in the `nonplugin` folder is executed. Executes the IP address change scripts for the services that are not included in the plug-ins of the Migration Tool GUI. The IP address change scripts are located in the `/opt/novell/migration/sbin/serveridswap/scripts/ipchange/nonplugin/` folder. If you need to change the IP address of any additional services, you must add the scripts to the `nonplugin` folder.

  No e-mail is sent in this step, even if you have selected the settings to receive an e-mail.

7 **Hostname Change:** Click **Next** to change the hostname of the system, services and their configuration files to the source server hostname.

IMPORTANT: Failure of the script to change the hostname or terminating the operation manually, may cause the system to hang. For more details, refer to Chapter 14, "Troubleshooting Issues," on page 89.

- **System:** The target server hostname is overwritten with the source server hostname.
- **Services:** The configuration files of the migrated services are assigned with the new hostname of the target server.
- **Others:** Executes the hostname change scripts for the services that are not included in the plug-ins of the Migration Tool GUI. The hostname change scripts are located in the `/opt/novell/migration/sbin/serveridswap/scripts/hostchange/nonplugin/` folder. If you need to change the hostname of any additional services, you need to add the scripts in the `nonplugin` folder.

  In this step, the Transfer ID wizard runs the hostname change scripts located in the `nonplugin` folder.

  NOTE: No e-mail is sent in this step, even if you have selected the settings to receive an e-mail.

8 **Reinitialize Server:** Click **Next** to reinitialize the target server with the IP address and hostname of the source server. eDirectory is also restarted.

9 **Repair:** Click **Next** displays an option to perform either of the following eDirectory repair:

- Unattended full repair of eDirectory (existing option in earlier OES releases)
- Local eDirectory database and network repair

The ndsrepair command is used to perform eDirectory repair. Service-specific repairs only run for services that were migrated using the current project.

- **eDirectory:** Checks if eDirectory is up and running on the target server. It also runs a repair on the eDirectory tree.
- **Certificates:** Repairs the target server certificate and the trusted root certificate.
- **LUM:** The following steps are performed during LUM repair:
  - Creates a Unix Workstation object.
  - Regenerates the certificate for LUM on the target server.
  - Associates LUM groups and users to the target servers's Unix Workstation object.
  - Refreshes the LUM cache.
- **Services:** Repairs the services that are migrated to the target server. If no services are configured for migration, then the Migration Tool skips this step and icon adjacent to **Services** changes to a green check mark.
- **Others:** Executes the repair scripts for the services that are not included in the plug-ins of the Migration Tool GUI. The scripts are located in the `/opt/novell/migration/sbin/serveridswap/scripts/repair/nonplugin/` folder. If you need to repair any additional services, you must add the scripts to the `nonplugin` folder.

  In this step, Transfer ID wizard runs the scripts located in `nonplugin` folder.
- **CleanUp:** Lists all the stale objects available on the temporary server. You can select the stale objects that needs to be deleted from the target server. Click **OK** to delete the selected objects.

10 **Restart Server:** Manually restart your target server for completion of Transfer ID.

The target server now runs with the source server identity.

Continue with Section 13, "Post Transfer ID Migration," on page 85.

11 Using Migration Commands for Transfer ID

Before running Transfer ID, ensure you have met all the prerequisites and prepared your servers as described in "Preparing the Source Server for Migration" on page 42 and "Preparing the Target Server for Migration" on page 42.

Before you begin, remember the following considerations:

- All the services you need must be migrated to the target server.
- When you start the Transfer ID process, you cannot perform any operations on the source server because the process locks the DIB (eDirectory database) on the source server.

Run all the commands on the target server, to perform Transfer ID:

1 **eDirectory Precheck:** Executes prerequisites that need to be done for Transfer ID scenario.

1a Use the following command to do an eDirectory precheck:

```
migedir -s <sourceipaddress> -u -A <projectpath> -i -t
```

For example, `/opt/novell/migration/sbin/migedir -s 172.16.100.101 -u -A /var/opt/novell/migration/NewProj0 -i -t`

When prompted, enter the username and password of the source server.

This step can be executed multiple times to verify the health of the eDirectory tree. Execution of this step does not modify the source server and target server.

1b Check the availability of the hostname and IP address on the source server. The hostname or IP address can be resolved using the DNS server or using the `/etc/hosts` file on the source server (OES Linux) or `SYS:etc\hosts` file on the NetWare server.

1c The `nam.conf` file on the target server includes LUM settings that will be required later while performing the repair steps for migration. Create a backup of `/etc/nam.conf` file on the target server by executing the command: `cp /etc/nam.conf <Project_path>/nam.conf.target`.

For example: `cp /etc/nam.conf /var/opt/novell/migration/NewProj0/nam.conf.target`

1d If the source server is OES, create a backup of the `/etc/nam.conf` file of the source server.

1e (Conditional) In an Active Directory environment, copy the following files from the source server to the migration project location on the target server. For example, `/var/opt/novell/migration/NewProj0/`.

- `/etc/krb5.conf`
- `/etc/krb5.keytab`
- `/etc/resolv.conf`
- `/etc/opt/novell/nit/nitd.conf`

1f Retrieve and store the list of LUM enabled groups:

(Conditional) If the source server is NetWare, enter

```
ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/nam-
grpmod.rb -H <target server short hostname> -a <admindn> -S <ldap-
server-ip> --ldap-port <port number> -p <password> -l
```

The above commands displays the list of groups that are LUM-enabled on the target server. These same groups must be LUM-enabled on completion of Transfer ID.

1g If the source server is OES, ensure that ssh keys to avoid multiple prompts for password on execution of this step.

To copy the ssh keys:

1. Enable ssh on the source server and target server.
2. Enter the command on the target server, `# ssh-keygen -t rsa`

   On executing the above command, you are prompted for the following:

   a. "Enter file in which to save the key (`/root/.ssh/id_rsa`)", press `Enter`.

   The ssh keys are stored in the default location.

   b. "Enter passphrase (empty for no passphrase)", press `Enter`.

   We recommend you not to include passphrase.
3. Copy the key value i.e. the output of the above command to the source server

   `# scp ~/.ssh/id_rsa.pub root@<source-server>`:/tmp
4. Log to source server using `ssh` and add the key value to the list of authenticated keys.

   `cat /tmp/id_rsa.pub >> /root/.ssh/authorized_keys`

1h If the source server is OES, ensure to copy the `.nss.dat` file to the target server. This file stores the nss user context information of the source server and is required when we repair the NSS admin object.

Enter the command on the target server,

```
scp <Source-IP>:/var/opt/novell/nss/.nss.dat /tmp/
```

2 Preparation: Removes the eDirectory from the target server. The LUM association with the groups and users is no longer available because the Unix Workstation object is also removed. In an AD environment the source server leaves the AD domain.

2a (Conditional) In an Active Directory environment, execute the following command:

2a1 `/opt/novell/xad/bin/kinit Administrator@<ad domain name>`

This command prompts for the administrator password.

IMPORTANT: Executing kinit is necessary to obtain and cache Kerberos ticket-granting ticket. It is mandatory to obtain the ticket before performing any AD domain related operations.

2a2 The target server must leave the AD domain, execute the following command:

```
/opt/novell/bin/novell-ad-util --leave-domain
```

For more information, see --leave-domain in the OES 2018 SP3: NSS AD Administration Guide.

2b To remove the Unix Workstation object on the target server, enter

```
/usr/bin/namconfig rm -a <admindn>
```

In the above command for SSL connection, you must use -l option and specify default port number as 636.

2c To remove eDirectory from the target server, enter

```
/opt/novell/eDirectory/bin/ndsconfig rm -c -a <admindn.novell> -w
ADM_PASSWD --config-file /etc/opt/novell/eDirectory/conf/nds.conf
```

Use dot format when passing values for -a option. For example, -a admin.novell

2d To verify the health of the eDirectory and to ensure that both the source server and target server are time-synchronized, enter

```
migedir -s <sourceipaddress> -u -A <projectpath> -i -t
```

For example, `/opt/novell/migration/sbin/migedir -s 172.16.100.101 -u -A /var/opt/novell/migration/NewProj0 -i -t`

When prompted, enter the username and password of the source server.

2e To perform common proxy migration, see "Pre-Migration Procedure" on page 246.

3 DIB Copy: Creates a backup of the eDirectory DIB (Directory Information Base) of the source server on to the target server. This step locks the DIB of the source server and further operations are not permitted on the source server.

```
migedir -s <source-server-ip> - u -A <logfile directory> -i -B
```

For example, `/opt/novell/migration/sbin/migedir -s 172.16.100.101 -u -A /var/opt/novell/migration/NewProj0 -i -B`

On running the above command, you are prompted for the username and password of the source server. Enter the admin credentials when prompted.

IMPORTANT: This command fails to execute if the replica ring is not in sync, or the time is not synchronized between all the servers in the replica ring.

NOTE: If you need to perform any operations on the source server, you must unlock the DIB. To unlock the DIB on the NetWare server, reload the `DS.nlm` file and on the OES server, restart `ndsd` daemon.

---

4 Shutdown Source: You need to shutdown the source server.

5 DIB Restore: Restores the eDirectory database that was backed up from the source server in Step 3 on the target server. This includes the NICI keys and the DIB identity.

IMPORTANT: Ensure to backup the target eDirectory database and NICI keys, see "Backup eDirectory Database and NICI Keys" on page 81 for more information.

5a At the command prompt of the target server, enter

```
migedir -R
```

For example, `/opt/novell/migration/sbin/migedir -R`

On running the above command, you will be prompted for the administrator credentials for the source server.

WARNING: If the backup in Step 3 on page 75 was not successful, the **DIB Restore** step fails. A failure at this point may cause the eDirectory service on the target server to be unusable.

---

6 **IP Address Change:** The IP address of the target server and its services is changed to the source server IP address.

The scripts to be executed in this step are located in the `/opt/novell/migration/sbin/serveridswap/scripts/ipchange` and `/opt/novell/migration/sbin/serveridswap/scripts/ipchange/nonplugin` folders.

- To change the IP address of the server in the `/opt/novell/migration/sbin/serveridswap/scripts/ipchange` folder, enter

  ruby `server-yast-ipchange.rb --old-ip <target_server IP> --ip <source_serverIP>`

  For example, `ruby server-yast-ipchange.rb --old-ip 172.16.200.201 --ip 172.16.100.101`

- The `ipchange` folder contains a list of scripts that need to be executed for changing the IP address. An example to change the IP address of the services on the target server by using the iprintipchange.sh script in the `/opt/novell/migration/sbin/serveridswap/scripts/ipchange/nonplugin` folder, enter

  ```
  <server-script> <target_server IP> <source_server IP>
  <source_server IP> <source_server IP>
  ```

  For example, `iprintipchange.sh 172.16.200.201 172.16.100.101 172.16.100.101 172.16.100.101`

  You also need to run the remaining scripts for other services in the same manner.

  WARNING: Failure of the script to change the IP address or terminating the operation manually, may cause the system to hang. If a service-specific IP address script fails to change the IP address, replace the `<service>.conf` file with `<service>.orig` file.

  For example, if eDirectory authentication fails on completion of **IP Change** step, do the following:

  `cp /etc/opt/novell/eDirectory/conf/nds.conf.orig /etc/opt/novell/eDirectory/conf/nds.conf`

- To change the IP address for the configuration files of each service on the target server enter the following in the `/opt/novell/migration/sbin/serveridswap/scripts/ipchange/nonplugin` folder:

  `ipchange.sh <oldip> <newip> <oldremoteip> <newremoteip> yes`

  Here, oldip is the IP address of the existing server and newip is the new IP address assigned to the server. The oldremoteip is the remote IP address that you used when installing the existing server into the eDirectory tree. If the remote IP address is not changed then, oldremoteip and newremoteip can be same.

  Example 11-1 *For example,* `ipchange.sh 172.16.200.201 172.16.100.101 172.16.200.200 172.16.200.200 yes`

  If you want to execute any additional scripts copy them to the `/ipchange/nonplugin` folder in the same pattern as the existing scripts.

7 **Host Name Change:** Hostname of the services is changed to source server hostname.

7a To change the hostname of the server and the services go to `/opt/novell/migration/sbin/serveridswap/scripts/hostchange` folder, enter

`<hostname-script> <targethostname> <sourcehostname>`

For example, `server-hostname-change.sh aus-market201.marketing.com aus-market101.marketing.com`

7b On the console, enter

hostname <sourceserver_name>

The above command changes the hostname of the server, when you relogin.

If you want to execute any additional scripts copy them to the `nonplugin` folder in the same pattern as the existing scripts.

For example, `./iprinthostchange.sh oldhostname newhostname oldmasterhostname newmasterhostname`

where *oldhostname* is the old server host name and *newhostname* is the new server host name. The master hostname is the hostname of the master server in the eDirectory tree. The *oldmasterhostname* and *newmasterhostname* can be the same if the master hostname is not changed on performing Transfer ID migration.

WARNING: Failure of the script to change the hostname or terminating the operation manually, may cause the system to hang. If a service specific hostname script fails to change the hostname, replace the <service>.conf with <service>.orig file.

For example, if iPrint authentication fails on completion of **Hostname Change** step, do the following:

```
cp /etc/opt/novell/iprint/httpd/conf/iprint_ssl.orig /etc/opt/novell/iprint/httpd/conf/iprint_ssl.conf
```

---

8 Reinitialize Server: Reinitialize the target server with the IP address and hostname of the source server. In this step, eDirectory is also restarted.

- To re initialize the server, enter

  `systemctl restart network`

- To restart eDirectory, enter

  `systemctl restart ndsd.service`

Next, you need to repair eDirectory, certificates for the server, LUM, and other OES services on the target server.

9 Repair: Performs repair of eDirectory, certificates, LUM, and services on the target server. The `ndsrepair` command is used to perform eDirectory repair. The service-specific repairs run only for services that were migrated using the current project.

9a eDirectory: You can either perform “Unattended full repair of eDirectory” or “Local eDirectory database and network repair”

9a1 To perform unattended full repair of eDirectory, enter

`/opt/novell/eDirectory/bin/ndsrepair -U`

or

9a2 To perform local eDirectory database and network repair

`/opt/novell/eDirectory/bin/ndsrepair -N`

`/opt/novell/eDirectory/bin/ndsrepair -R`

9a3 To restart eDirectory, enter

```
systemctl restart ndsd.service
```

Ensure to fix all errors before proceeding with the next step.

9b Repair Certificates: To create the SAS object, enter

```
/opt/novell/eDirectory/bin/ndsconfig add -m sas -a <admin dn> --
config-file /etc/opt/novell/eDirectory/conf/nds.conf
```

9b1 To regenerate the certificate on the target server, enter

```
/opt/novell/oes-install/util/getSSCert -a <new_ip_address> -t
<treename> -u <admindn dot format> - x <password>
```

For example, `/opt/novell/oes-install/util/getSSCert -a 172.16.100.101 -t TESTTREE -u cn=admin.o=novell -x novell`

The regenerated `SSCert.der` certificate is stored at `/etc/opt/novell/certs` location.

9b2 To convert the certificate to the pem format, enter

```
openssl x509 -inform der -in /etc/opt/novell/certs/SSCert.der -
outform pem -out /etc/opt/novell/certs/SSCert.pem
```

9b3 To verify the health of eDirectory, enter

```
ndscheck -h <new_ip_address> -a <admindn dot format> -w
<adminpass> -F <Project_path>
```

For example, `ndscheck -h 172.16.100.101 -a cn=admin.o=novell -w novell -F /var/opt/novell/migration/Newproject1/ndscheck.log`

You must resolve all errors before proceeding to the next step. It is recommended to backup the `nam.conf` file before proceeding with the next step.

9b4 (Conditional) To remove the existing nam.conf, enter

```
rm /etc/nam.conf
```

9c LUM: Create or modify the existing Unix Workstation object:

- If the source server is NetWare, a new Unix Workstation object is created. Enter the following command:

  ```
  ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/
  nam-reconf.rb -a <admindn comma format> -p <admin password> -S
  <ldap-server-ip> --ldap-port <port number> -u
  <Unix_config_object-dn>
  ```

  where *Unix_config_object-dn* is the value of the base-name parameter in the `nam.conf` file. A backup of the file was created in Step 1c.

  ldap-server-ip is the value of the preferred-server parameter in the `nam.conf.target` file.

  NOTE: If the value of the preferred-server parameter is the same as the IP address of the target server, then the value of the *ldap-server-ip* must be the same as the IP address of either the source server or the appropriate LDAP server.

- If the source server is OES, the Unix workstation object is retained. To modify the Unix workstation object, enter the following command:

```
ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/
nam-reconf.rb -a <admindn comma format> -p <admin password> -S
<ldap-server-ip> --ldap-port <port number> -u
<Unix_config_object-dn>
```

where *Unix_config_object-dn* is the value of the base-name parameter in the `nam.conf` file. A backup of the file was created in Step 1d.

ldap-server-ip is the value of the preferred-server parameter in the `nam.conf.target` file.

For example, `ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/nam-reconf.rb -a cn=admin,o=novell -p novell -S 172.16.200.201 --ldap-port 636 -u "o=novell"`

9c1 To copy the certificate for LUM operations, enter

```
cp /etc/opt/novell/certs/SSCert.der /var/lib/novell-lum/
.<new_ip_address>.der
```

For example, `cp /etc/opt/novell/certs/SSCert.der /var/lib/novell-lum/.172.16.100.101.der`

9c2 (Conditional) If the source server is NetWare, run the command to modify the users and groups listed in Step 1f on page 73:

`ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/nam-grpmod.rb -H <source short hostname> -a <admin dn> -S <ldap-server-ip> --ldap-port <port number> -p <password> --grp <group FDN>` -l <LUM enabled user and groups> [--check]

ldap-server-ip is the value of the preferred-server parameter in the `nam.conf.target` file.

Parameters	Description
-H	Specify the hostname of the source server
-a	Specify the administrator's name in LDAP format
-S	Specify the IP address of the preferred LDAP eDirectory server.
--ldap-port	Specify the port for LDAP server to listen on.
-p	Specify the administrator's password.
--grp	Specify the group to be modified.
-l	Specify the list of LUM enabled user and groups in fully distinguished format.
--check	Verify LUM enabled users and groups

When prompted, enter the password for the administrator.

9c3 (Conditional) If the source server is OES, modify the users and groups by entering the following command:

```
ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/
nam-fix.rb -H <new_server short hostname> -a
<admindn_comma_format> -p <password> -S <ldap-server-ip> --ldap-
port <port number>
```

For example, ruby /opt/novell/migration/sbin/serveridswap/scripts/repair/nam-fix.rb -H mark-nov101 -a cn=admin,o=novell -p novell -S 172.16.100.101 --ldap-port 636

9c4 Refresh LUM Cache, run `/usr/bin/namconfig cache_refresh` to rebuild LUM cache.

9c5 (Conditional) If the source server is OES linux server, enter

```
chown -R wwwrun:www /var/opt/novell/nici/30
```

You must change the ownership, so that you can login to iManager post-Transfer ID.

9d To repair pool and volume objects, enter

```
/opt/novell/migration/sbin/serveridswap/scripts/repair/volrepair.rb
-a <admindn_comma_format> -p <password> -f <project_path>/fs
```

For example, /opt/novell/migration/sbin/serveridswap/scripts/repair/volrepair.rb -a cn=admin,o=novell -p novell -f /var/opt/novell/migration/NewProj1/fs

9e **Services:** The scripts are executed for the services that are migrated before performing Tansfer ID.

- To repair iPrint service, enter

```
/opt/novell/migration/sbin/serveridswap/scripts/repair/
iprintrepair.sh -s <new IP> -u <admindn comma format> -T <source
type {-L|-N}> -p <ssl port> -S
```

For example, /opt/novell...iprintrepair.sh -s 172.16.100.101 - u cn=admin,o=novell -T -L -p 636 -S

Specify -S option only when LDAP server is configured for SSL. And do specify SSL port only if its configured.

- To repair CIFS service, enter

```
sh /opt/novell/migration/sbin/migcifs.sh -s <new IP> -p <ssl
port> -a <admindn_ldap_format> {-f 1 <if ssl> | -f 0 <non-ssl>}
-t <tree name> -d <target server IP> -q <port> -b <admin name> {-
g 1 <if ssl> | -g 0 <non-ssl>} -m <project_path>/cifs/
cifsSourceShares.tmp -S 3 -r
```

9f **Others:** Execute the repair scripts for the services that are not included in the plug-ins of the Migration Tool.

- **NSS Admin Object:** To repair the NSS admin object, execute the following on the target server depending on the source server (NetWare or OES):

```
/opt/novell/migration/sbin/serveridswap/scripts/repair/nss-
adminrepair.sh -a <admindn dot format> -p <admin password> -s
<source server [OES/NW]> -o <nssadmin object name with server
context>
```

where -a, -p, -s are mandatory parameters. If the source server is NetWare (NW), the `-o` option is required to create a new NSS admin object.

For example: `nss-adminrepair.sh -a admin.sales.novell -p test -s NW -o nssAdminUser.sales.novell`

- **Common Proxy:**
  - If the source is Netware, to repair common proxy on the target OES 2018 SP3 server, execute the following:

    ```
    /opt/novell/proxymgmt/bin/mignwproxy.sh -d <LDAP Admin FDN>
    -w <LDAP Admin Password> -i <LDAP-Server-IP-Address> -p <LDAP
    Secure Port>
    ```

  - If the source is Linux, to perform common proxy migration on the target OES 2018 SP3 server, see "Post-Migration Procedure" on page 247.
- **Active Directory:**
  1. Overwrite the target server's files `/etc/krb5.conf`, `/etc/krb5.keytab`, and `/etc/resolv.conf` with source server files copied in Step 1e.
  2. Merge the contents of the target server's file `/etc/opt/novell/nit/nitd.conf` with the source server file nitd.conf copied in Step 1e.
  3. Execute the following command:

     ```
     rcnovell-nit restart
     ```

  4. Execute the following command:

     ```
     /opt/novell/xad/bin/kinit -E Administrator@<ad domain name>
     ```

- **NetStorage:** To repair NetStorage, enter the following commands:

  ```
  /opt/novell/xtier/bin/xsrvcfg -D
  ```

  ```
  /opt/novell/xtier/bin/xsrvcfg -d <ipaddress> -c <context>
  ```

  where context is the value of the attribute CONFIG_XTIER_USERS_CONTEXT in `/etc/sysconfig/novell/netstore11` file.

  ```
  /usr/sbin/rcnovell-xregd restart
  ```

  ```
  /usr/sbin/rcapache2 restart
  ```

10 **Restart Server:** Restart the target server for the changes to take effect.

On successful completion of the Transfer ID migration, the target server functions with the source server's eDirectory identity.

Backup eDirectory Database and NICI Keys

Before performing Transfer ID, we recommend that you to back up your eDirectory database and NICI keys on both the source server and target server. If the Transfer ID fails or you quit the scenario, you cannot perform any actions on the source server without restoring the server's DIB from the backup.

For more information on backing up and restoring eDirectory, refer to the *NetIQ eDirectory Administration Guide*.

For more information on backing up and restoring NICI keys, refer to the *NetIQ eDirectory Administration Guide*.

12 Running Transfer ID Remotely

NOTE: It is recommended to perform Transfer ID from the target OES machine instead of performing it remotely.

If you need to perform Transfer ID remotely, you need to complete the prerequisite procedures in Chapter 9, "Preparing for Transfer ID," on page 61. When you perform Transfer ID remotely, after the IP address of the target server is changed with the IP address of the source server, the remote machine hangs. This happens because the IP address of the target server no longer exists. To perform Transfer ID remotely, perform any of the following methods:

- "Using Two Network Interface Cards" on page 83
- "Using VNC" on page 83
- "Using SSH" on page 84

Using Two Network Interface Cards

To perform Transfer ID remotely, you can connect to the secondary IP address of the target machine using SSH client or VNC client and follow Step 1 on page 68 to Step 10 on page 71. The connection will never be terminated because only the primary IP address of the target server changes during Transfer ID.

Using VNC

To perform Transfer ID by using the VNC client (TightVNC), perform the following steps:

1. Connect to the remote VNC client(TightVNC) running on target server from your server or desktop by providing the IP address of the target server.
2. On the command prompt enter, `miggui` to launch the application.
3. Authenticate both source and target servers.
4. Select the migration type as Transfer ID.

   You can either migrate all the services to an OES server, then transfer the NetWare or OES server's identity, or only transfer NetWare or OES server's identity to an OES server.
5. Perform Step 1 on page 68 (eDirectory Precheck) to Step 6 on page 70 (IP Change) provided in the "Run Transfer ID" on page 68.

   After changing the IP address, the TightVNC console will hang.
6. Close VNC client and then relaunch it.
7. Connect to the VNC server by providing the new IP address from Step 5.
8. To complete Transfer ID, perform Step 7 on page 70 (Hostname Change) to Step 10 on page 71 (Restart Server) provided in the "Run Transfer ID" on page 68.

Using SSH

You can migrate the services (Step 1 to Step 5) using either the Migration GUI or using CLI. From Step 6, you must proceed only with CLI because after IP change you cannot SSH to the target server.

To perform Transfer ID by using the SSH console, perform the following steps:

1. Connect to target server using SSH.
2. On the command prompt enter, `miggui` to launch the application.
3. Authenticate both source and target servers.
4. Select the migration type as Transfer ID.

   You can either migrate all the services to an OES server, then transfer the NetWare or OES server's identity, or only transfer NetWare or OES server's identity to an OES server.
5. Save the project and close the Migration Tool GUI.
6. Run the scripts mentioned in Step 1 on page 73 (eDirectory Precheck) to Step 5 on page 75 (DIB Restore) provided in the Chapter 11, "Using Migration Commands for Transfer ID," on page 73.
7. On the SSH terminal console, run the script mentioned in Step 6 on page 76 (IP Change) provided in the Chapter 11, "Using Migration Commands for Transfer ID," on page 73.

   After running these scripts the remote machine hangs.
8. Reconnect to the target server with the new IP address provided in Step 7.
9. On the SSH terminal console, run the scripts mentioned in Step 7 on page 76 (Host Name change) to Step 8 on page 77 (Reinitialize Server) provided in the Chapter 11, "Using Migration Commands for Transfer ID," on page 73.
10. To complete Transfer ID, run the scripts mentioned in Step 9 on page 77 (Repair) to Step 10 on page 81 (Restart Server).

13 Post Transfer ID Migration

- "Joining Target Server to an Active Directory Domain" on page 85
- "Cleanup Objects" on page 85
- "DFS Junctions are Not Restored" on page 87

Joining Target Server to an Active Directory Domain

If the source server or the target server is not joined to AD, then on completion of Transfer ID, you must join the target server to an Active Directory domain either by using Yast or the command line options.

- For more information on performing the steps by using YaST, see Installing and Configuring NSS Active Directory Support in the OES 2018 SP3: Installation Guide.
- To use the command line, see novell-ad-util.

Cleanup Objects

On completion of Transfer ID, some of the objects in eDirectory retain the temporary Linux server hostname. You can either clean up the objects from the GUI or manually from the target server. Even if the objects are not cleaned, they do not impact the working of the target server.

- "AFP" on page 85
- "CIFS" on page 86
- "eDirectory" on page 86
- "NSS" on page 86
- "iPrint" on page 86
- "DHCP, FTP and NTP" on page 86

AFP

If you decide to delete the proxy username having the old hostname, you must recreate new proxy user using YaST.

1. Using iManager delete the proxy user. The format of the proxy user is cn=afpProxyUser-<new_hostname>.<context_of_server>
2. Using YaST, recreate the proxy user.

   ```
   yast2 novell-afp
   ```

CIFS

If you decide to delete the proxy username having the old hostname, you must recreate new proxy user using YaST.

1. Using iManager delete the proxy user. The format of the proxy user is cn=cifsProxyUser-<new_hostname>.<context_of_server>
2. Using YaST, recreate the proxy user.

   ```
   yast2 novell-cifs
   ```

eDirectory

Delete the following objects that are present with temporary Linux hostname:

- SAS Service-*<temporaryLinuxhostname>*
- DNS AG *<temporaryLinuxhostname>*
- IP AG *<temporary IP address-temporaryLinuxhostname>*
- SSL CertificateDNS-*<temporaryLinuxhostname>*
- SSL CertificateIP-*<temporaryLinuxhostname>*

NSS

- "Pools and Volumes" on page 86

Pools and Volumes

The pools and volumes created on the Linux server before performing Transfer ID are associated with the old hostname, perform the following post Transfer ID:

1. Using iManager, delete the pool and volume object containing the temporary Linux hostname name.
2. (Conditional) If the target server contains pools or volumes which are not available on the source server, recreate these objects using **Update NDS** option from NSSMU.

iPrint

1. To delete NDPSPrinter object, run `/opt/novell/iprint/bin/iprintcleanup.pl` script.

   For information on how to run the script, see "Cleaning Up Stale Objects" on page 220.

DHCP, FTP and NTP

These services require no additional steps after Transfer ID.

DFS Junctions are Not Restored

If a volume on the source server is a DFS junction target, the junctions are not restored on the target server after Transfer ID migration.

After performing Transfer ID, delete the `~DFSINFO.8-P` file from the migrated volumes on the target server, then run VLDB repair to update the file from eDirectory. For more information about VLDB repair, see "Repairing the VLDB" in the *OES 2018 SP3: Distributed File Services Administration Guide for Linux*.

14 Troubleshooting Issues

- "Copying NICI Keys Fails When Performing Transfer ID" on page 89
- "LUM Repair Fails When Performing Transfer ID" on page 89
- "On Completing Transfer ID migration, iManager or OES Remote Manager is Not Accessible via a Web browser on the Target Server" on page 89
- "System Might Hang on Terminating the IP Address Change Step when Performing the Transfer ID Scenario" on page 90
- "System Might Hang on Terminating the Hostname Change Step when Performing the Transfer ID Scenario" on page 90
- "On Failure of Migration and Restoring eDirectory to the Source Server, LDAP Does Not Bind" on page 91
- "eDirectory Error 626 on Performing Transfer ID Migration" on page 91
- "Transfer ID fails when NetStorage is Configured on the Source Server" on page 92

Copying NICI Keys Fails When Performing Transfer ID

Description: If the source server is NetWare copying NICI files fails due to `DSMETER.NLM`.

Action: To resolve this issue, you must comment the line, "LOAD DSMETER" in the `autoexec.ncf` file and restart the NetWare server before performing Transfer ID.

LUM Repair Fails When Performing Transfer ID

Description: The container admin performing Transfer ID is not part of the admingroup object or does not have supervisory permissions on all the users or groups in the admingroup object.

Action: To resolve this issue, either Transfer ID should be performed using a treeadmin or if a container admin is used, ensure the admin has supervisory permissions on all the users or groups in the admingroup object.

On Completing Transfer ID migration, iManager or OES Remote Manager is Not Accessible via a Web browser on the Target Server

Description: In the Transfer ID migration, certificates were not repaired properly in the **Repair** step.

Action:

1. Relaunch the project created for the Transfer ID migration, then authenticate to the target server.

On successful authentication of the target server, the Transfer ID GUI is launched. The **Finish** and the **Back** buttons are highlighted.

2 Click **Back** to reach the **Repair** step, then run the **Repair** step again.

3 Restart the target server for changes to be effective.

System Might Hang on Terminating the IP Address Change Step when Performing the Transfer ID Scenario

Description: Failure of the script to change the IP address or terminating the **IP Change** step manually might cause the system to hang. You must restart the target server and replace the service-specific configuration file with the backup file for the service.

Action: To restore the original IP address of the target server, replace the `<service>.conf` configuration file with the `<service>.orig` backup file for the service.

For example, if eDirectory authentication fails on completion of the **IP Change** step, use the following command:

```
cp etc/opt/novell/eDirectory/conf/nds.conf.orig etc/opt/novell/eDirectory/
conf/nds.conf
```

where `nds.conf.orig` is the backup service file on the target server and `nds.conf` is the configuration file created during execution of the **IP Change** step.

System Might Hang on Terminating the Hostname Change Step when Performing the Transfer ID Scenario

Description: Failure of the script to change the hostname or terminating the **Hostname Change** step manually might cause the system to hang. You must restart the target server and replace the service-specific configuration file with the backup file for the service.

Action: To restore the original hostname of the target server, replace the `<service>.conf` configuration file with the `<service>.orig` backed up file of the service.

For example, if iPrint authentication fails on completion of the **Hostname Change** step, use the following command:

```
cp /etc/opt/novell/iprint/httpd/conf/iprint_ssl.orig /etc/opt/novell/
iprint/httpd/conf/iprint_ssl.conf
```

where `iprint_ssl.orig` is the backup service file on the target server and `iprint_ssl.conf` is the configuration file created during execution of the **Hostname Change** step.

On Failure of Migration and Restoring eDirectory to the Source Server, LDAP Does Not Bind

To bind LDAP you must modify the values of the LDAP configuration version of the LDAP server and LDAP group objects of the source server:

If the LDAP server displays a message, “Config version 10 is greater than 8 in attribute” or any such similar message, you must change the `Version` attribute value of the LDAP group and server objects of the source server to 8. You can change the attribute values using iManager. Perform the following steps:

1. Access iManager, then log in to the eDirectory tree where the source server you want to manage resides.
2. In **Roles and Tasks**, select **Directory Administration > Modify Object**.
3. Browse and select the LDAP server object of the source server, then click **OK**.
4. In **General > Other** tab, in Valued Attributes column, select **ldapConfigVersion** and click **Edit.**
5. Change the **LDAP Configuration Version** value as defined in the error, then click **OK**.

   For example, if the LDAP server displays a message, “Config version 10 is greater that 8 in attribute” or any such similar message, you must change the **LDAP Configuration Version** attribute value of the LDAP server to 8.
6. Click **OK**.
7. Repeat Step 2 to Step 6 for LDAP group objects of the source server.
8. Restart LDAP module on the source server:

   On NetWare:

   ```
   unload nldap.nlm
   load nldap.nlm
   ```

   On OES

   ```
   nldap -u
   nldap -l
   ```

On performing the preceding steps the server returns to the status before it is removed from the eDirectory tree.

eDirectory Error 626 on Performing Transfer ID Migration

1. Check the status of SLP by entering

   ```
   rcslpd status
   ```

   If SLP is not running, start SLP by entering

   ```
   rcslpd start
   ```

   For information on using SLP, see “Using SLP with eDirectory” in the *NetIQ eDirectory Installation Guide*.
2. (Conditional) If SLP is not used, create `/etc/opt/novell/eDirectory/conf/hosts.nds` file on the non-replica server that points to the master server and the container in which the user object is present. For more information, refer to the manpage `hosts.nds`.

Transfer ID fails when NetStorage is Configured on the Source Server

During Transfer ID process, miggui tries to retrieve the proxy credentials for each of the services configured on the source server. If NetStorage is configured, its script returns the proxy user name in dot separated format instead of comma separated format. Due to this, miggui displays the following warning: "The source server is configured with both service proxy and common proxy. This is not a supported scenario and will cause failure of proxy user migration. Do you want to continue?" In this scenario, the OES services fail to launch after the transfer ID is complete.

To resolve this issue, before starting the transfer ID process, update the source OES 2015 or later server, and reconfigure NetStorage using **YaST** > **OES Install and Configuration**, or by executing `yast2 netstorage` command. Complete the reconfiguration steps without altering any of the existing settings.

V Security Considerations

- Chapter 15, “Security Considerations for Data Migration,” on page 95

15 Security Considerations for Data Migration

This section describes how the Micro Focus Open Enterprise Server (OES) file system Migration Tool can be used in a secure environment. It provides information to help you ensure that authentication credentials and other sensitive data are not compromised through the use of the Migration tool.

For additional security implementation information, see "Security" in the *OES 2018 SP3: Planning and Implementation Guide*.

- "Root-Level Access Is Required" on page 95
- "Securing User Credentials" on page 95
- "Mounting Remote File Systems" on page 97
- "Transmitting Data Across the Network" on page 97
- "Managing Passwords for Migrated Users" on page 97

Root-Level Access Is Required

To use the OES migration tool, you must be logged in to the target OES 2018 SP3 server as `root` or a root-equivalent user.

Securing User Credentials

You can take precautions to ensure that authentication credentials (usernames and passwords) are securely stored and retrieved when using the migration tool.

- "How User Credentials Are Stored During a Migration" on page 95
- "How Credentials Are Passed from the Migration GUI Utilities to the Migration Commands" on page 96
- "Managing Credential Storage with migcred" on page 97
- "Securing Credentials When Piping Commands" on page 97

How User Credentials Are Stored During a Migration

By default, neither the migration GUI utilities (File System Migration Utility) nor the command line tools (`mls`, `migfiles`, etc.) store the usernames and passwords entered by the user running the migration.

- "Migration Commands" on page 96
- "Migration GUI Utilities" on page 96

Migration Commands

When using the migration commands, administrators can choose to use the OES Credential Store (OCS) to store the credentials, so that they are not prompted repeatedly for usernames and passwords when authenticating to the source and target servers. This feature can be selected by adding the `--use-casa` option in the migration commands. If this option is used, the username and password information is stored in OCS.

As an alternative to using the `--use-casa` option in the migration commands, you can set the MIG_USE_CASA environment variable by using the following export command:

```
export MIG_USE_CASA=1
```

You can set this environment variable in the shell init scripts so that every shell has it set.

Various migration commands provide the `--use-casa` option, which tells the command to obtain the credentials from OCS and not prompt the user for them. If the `--use-casa` option is used and the credentials are not found in OCS, the command prompts for them and then stores them in OCS.

Migration GUI Utilities

The migration GUI utilities do not use OES Credential Store (OCS), nor do they store user credentials in any file format. Rather, the utilities accept the user credentials entered for the source server and target server and, after validating them (via secure or non-secure LDAP authentication), the utilities store this information in a proprietary cache. These credentials are used by the applications to execute various migration-related operations. For example:

- To retrieve NetWare source volumes, the File System Migration Utility issues an `nwmap` command.
- To carry out migrations, the GUI utilities execute the required migration commands (`mls`, `migfiles`, `maprights`, `maptrustees`, etc.).

The migration utility cache is flushed when the applications are closed.

In a saved migration project, only the IP addresses of the source and target servers, the volume names, and any other migration options, are stored in the `.xml` configuration file. When you open and rerun a saved project, you are prompted to reenter the credentials.

How Credentials Are Passed from the Migration GUI Utilities to the Migration Commands

The GUI utilities execute migration commands within their process context and pass the user credentials whenever required or prompted through their process APIs, which can be hidden from the user. The GUI applications neither set the credentials in environment variables nor use the OES Credential Store (OCS), even though the migration commands provide the option.

To pass credentials to the migration commands, the GUI utilities open a terminal connected to the standard input and feed in the password to the command line prompt.

Managing Credential Storage with migcred

As mentioned previously, administrators can choose to store user credentials in OCS so that they are not prompted for usernames and passwords every time they perform a migration task.

You can use the `migcred` command to control and manage what is stored in OCS. This command provides options to store and view information for a particular identity. With the necessary user credentials stored in OCS, usernames and passwords can be retrieved as needed by other migration commands.

Securing Credentials When Piping Commands

Administrators might also want to pipe the output of one migration command to another, so they cannot feed usernames and passwords to the commands through the console. Using OCS provides a way to protect this secure information when piping migration commands.

The user must include the `--use-casa` option when building the pipelines. For example:

```
mls -s 192.168.131.135 -v V1 --use-casa | maptrustees -s 192.168.131.135 -
r --use-casa
```

Mounting Remote File Systems

The migration tool must mount the remote file systems of the source servers in order to obtain information about the source volumes and to copy the specified data to the target server.

For NetWare and OES migrations, the `mls` and `migfiles` uses `nwmap` command to map to the remote volumes and read data from the _admin volume to validate the source path. The `mls` and `migfiles` commands unmounts the file system upon termination. If a process is killed forcibly (`kill -9`), the mount point remains mounted and must be unmounted by the administrator.

The `mls` command uses nbackup tool to build the list of trustees.

Transmitting Data Across the Network

The OES migration tool use Storage Management Services (SMS) to copy data from OES servers. Data is not encrypted when it is transmitted across the network.

Managing Passwords for Migrated Users

When performing a tree-to-tree migration, you have the option to migrate users into the target server's eDirectory tree. If you are migrating users, you have two choices for passwords:

- Generate random passwords for the migrated users (by using the `-r` option of the `migtrustees` command).When using this option, you must always pass the --newusers-password-file option so that the randomly generated passwords and usernames are stored in the file.

or

- Assign a specific password for all migrated users (by using the `-s` option of the `migtrustees` command)

If neither `-r` nor `-s` is used, users are created without a password and the user accounts are locked until they are manually assigned a password by the administrator, using iManager or other eDirectory management tools. Null passwords (`-s ""`) are not allowed.

The new passwords generated by -r option are stored in a new file. To avoid password theft, dispose of this file in a secure manner after you have communicated the new passwords to their respective users.

VI Data Migration

- Chapter 16, “Migrating File Systems to OES 2018 SP3,” on page 101

16 Migrating File Systems to OES 2018 SP3

This section provides information on how to migrate the file system from supported source servers to an OES 2018 SP3 server.

- "Preparing for File System Migration" on page 101
- "Migration Scenarios" on page 103
- "Moving Devices for Migrating the Data from NetWare to OES 2015 or Later" on page 107
- "Migrating File System Using GUI" on page 108
- "Synchronizing File System Using Migration GUI" on page 114
- "Migrating File System Using Command Line Utilities" on page 115
- "Troubleshooting" on page 141

Preparing for File System Migration

To prepare your network for file system migration, complete the tasks in the following sections:

- "Source Server Requirements" on page 101
- "Target Server Requirements" on page 102

Source Server Requirements

- "NetWare Server" on page 101
- "OES Server" on page 102

NetWare Server

- Shut down any applications, products, or services (virus scan software, backup software, etc.) running on the server to be migrated.
- Ensure that the latest version of Storage Management Services (SMS) is running on the source NetWare server.

  SMS updates can be downloaded from the Micro Focus Downloads Web site (http://download.novell.com/patch/finder/#familyId=122).
- When migrating data from a Traditional NetWare volume, ensure that the NPM files for NFS and the NFS name space is loaded on the Traditional NetWare Volumes.
- Although data on the source server is not deleted as part of the migration, we recommend that you back up your data.

OES Server

- Shut down any applications, products, or services (virus scan software, backup software, etc.) running on the server to be migrated.
- Ensure that the server is running supported OES versions with all the available patches in the channel.
- Ensure that Storage Management Services (SMS) and NetWare Core Protocol (NCP) is running on the server.
- Ensure that source volumes on OES servers are NSS volumes, NCP volumes, or POSIX volumes.

  NOTE: The Migration Tool GUI does not support POSIX file system migration. Create an NCP volume with the POSIX path that you want to migrate, then migrate the NCP volume.

- To migrate data from NCP volumes on OES server, ensure that you have done the following:
  - Install the Novell Client for Linux
  - Restart SMS by running the following command:

    ```
    rcnovell-smdrd restart
    ```

  - Ensure that the user performing migration has read/write/access rights to back up the files on the NCP volume.
- To perform migration, the user must have read/write/access permissions to the source server

Target Server Requirements

- Ensure that the server is running OES 2018 SP3.
- Services to be migrated must be installed and configured on the target server.

The following additional prerequisites must be met for NSS and NCP target volumes:

- “For NSS Target Volumes” on page 102
- “For NCP Target Volumes” on page 102

For NSS Target Volumes

- ❒ Using Migration GUI, if you have configured file system and for some reason the mount point of NSS volumes change, then you must reconfigure the paths for file system.
- ❒ Create the NSS volumes to which you will migrate the data. Ensure that you allocate sufficient space for the volume to hold all of the source data.
- ❒ Ensure that the target volumes have similar properties to the source volumes. For example, if compression is turned on for the source volume, turn on compression for the target volume as well. The same applies to user quotas and other NSS features.

For NCP Target Volumes

- ❒ Create NCP volumes to which you will migrate the data.

- ❒ Ensure that the user performing the migration has read/write/access rights to the POSIX path that corresponds to the NCP volume.
- ❒ Although data is successfully migrated to the clustered NCP target volumes, trustee migration is not supported.

Migration Scenarios

The procedures for migrating file system data from the NSS volumes or Traditional volumes on NetWare or from the NSS volumes on OES vary depending on whether the source server and target server are in the same eDirectory tree or in different eDirectory trees. This section covers the following scenarios:

- "Consolidating Data to a Server in the Same Tree" on page 103
- "Consolidating Data to a Server in a Different Tree" on page 103
- "Migrating Compressed Files" on page 104
- "Data Migration for Clustered Volumes" on page 104
- "Data Migration for DST Volumes" on page 105
- "Data and Trustee Migration in Active Directory Environment" on page 107
- "Transfer ID" on page 107
- "Migration Procedure" on page 107

NOTE: For more information about migration scenarios, see Chapter 1, "Overview of the Migration Tools," on page 15.

Consolidating Data to a Server in the Same Tree

The source file system volumes are migrated to the target file system volumes within the same eDirectory tree.

The following are migrated from the source server to target server:

- Volumes, folders and files
- Trustee rights for files

Consolidating Data to a Server in a Different Tree

The source file system volumes are migrated to the target file system volumes in a different eDirectory tree.

The following are migrated from the source server to target server:

- Volumes, folders and files
- Trustee rights for files
- Create users in the target's file system volumes.
- An option to set a default global password for the new users created on the target server.

Migrating Compressed Files

In any of the following scenarios compressed files are seamlessly migrated from source server to target server:

- Source server volumes and target server volumes both are compression enabled.
- Source server volume is compression enabled and target volume is not enabled for compression. Migration gui uncompresses the migrated files on the target server volume.
- Source server volume is not enabled for compression and target volume is compression enabled. Migration gui compresses the migrated files on the target server volume.

The compress and uncompress commands run as a backend process in the migration gui.

Data Migration for Clustered Volumes

You can perform data migration by upgrading only the cluster nodes or both the cluster nodes and storage:

- “Upgrading NetWare Cluster Nodes” on page 104
- “Upgrading NetWare Cluster and Shared Storage” on page 104

Upgrading NetWare Cluster Nodes

One or more NetWare nodes are replaced with OES 2015 or later nodes. OES Cluster Services supports rolling server upgrade, using which one or more NetWare nodes can be replaced with OES 2015 or later nodes. For performing upgrade, refer to the “Converting NetWare Cluster Nodes to OES (Rolling Cluster Conversion)” in the *OES 2015 SP1: Novell Cluster Services NetWare to Linux Conversion Guide*.

Upgrading NetWare Cluster and Shared Storage

All nodes and shared storage is replaced with new cluster with OES 2015 or later configured on a new shared storage. Migrating cluster NSS volumes from NetWare cluster to a new Linux cluster can be achieved using Migration Tool.

The Migration Tool provides two options **Is Cluster Resource** and **Follow Cluster Resource** to perform cluster migration.

If you select **Follow Cluster Resource** option, migration continues uninterruptedly during cluster resource migrations to different cluster nodes. This option is valid only on the source server clusters. On migrating data to cluster NSS volume on the target server, migration stops when the resource migrates to a different node. To continue migration you must make the resource active on the target server.

If this option is not selected, migration stops when the resource migrates to a different node on source server. Once the resource comes up on the different node, re-start migration to continue the migration from where it failed. The Migration Tool supports only source NSS volumes for migration.

Data Migration for DST Volumes

On performing migration for DST volumes, the data is migrated for only the primary volume and does not include the secondary volume. To perform migration for all the volumes, remove the shadow volume relationship of the DST server.

When performing migration, consider the following:

Source Server as DST

- The target server can be a DST or non-DST server.
- Stop the DST policies before performing the migration.

  For more information on stopping the policies, see “Stopping a Running Policy” in the *OES 2018 SP3: Dynamic Storage Technology Administration Guide*.
- Only the data that is stored on the primary volume of the source server is migrated to the target server.
- To migrate the data from all the volumes of the source server, remove the shadow volume relationship on the source server.

  For more information on removing the shadow volume relationship, see“Removing the Shadow Relationship for a Clustered DST Volume Pair” or “Removing the Shadow Relationship for a Non-Clustered DST Shadow Volume” in the *OES 2018 SP3: Dynamic Storage Technology Administration Guide*.
- Configure the file system GUI to perform migration. For more information, go to “Migrating File System Using GUI” on page 108.

Target server as DST

- The source server can be a DST or non-DST server
- Stop the DST policies before performing migration.

  For more information on stopping the policies, see “Stopping a Running Policy” in the *OES 2018 SP3: Dynamic Storage Technology Administration Guide*.
- The data is migrated from the source server to only the primary volume of the target server.
- To migrate the data from the source server to all the volumes on the target server, remove the shadow volume relationship on the target server.

  For more information on removing the shadow volume relationship, see “Removing the Shadow Relationship for a Clustered DST Volume Pair” or “Removing the Shadow Relationship for a Non-Clustered DST Shadow Volume” in the *OES 2018 SP3: Dynamic Storage Technology Administration Guide*.
- Configure the file system GUI to perform migration. For more information go to “Migrating File System Using GUI” on page 108.

Example 16-1 *For Example:*

Consider a scenario, where you are migrating data from a source non-DST server to a target DST server. The source server has volumes *Vol1*, *Vol2*, *Vol3* of 3 GB/TB each. The target server contains the primary volume *Vol4* with 1 GB/TB space and secondary volume *Vol5* with 10 GB/TB space. In this scenario you can migrate the data by using any of the following:

- "Migrating without the Shadow Volume Relationship:" on page 106
- "Migrating with the Shadow Volume Relationship:" on page 106

Migrating without the Shadow Volume Relationship: When the shadow volume relationship is removed from the target server, it acts as a non-DST server and the migration can be performed normally.

Perform the following to migrate the data:

1. Remove the shadow volume relationship. For more information, see "Removing the Shadow Relationship for a Clustered DST Volume Pair" or "Removing the Shadow Relationship for a Non-Clustered DST Shadow Volume" in the *OES 2018 SP3: Dynamic Storage Technology Administration Guide*.
2. Configure the file system GUI to perform migration. For more information go to "Migrating File System Using GUI" on page 108.

Migrating with the Shadow Volume Relationship: Considering the Example 16-1, only 1 GB/TB (depending on *Vol4* size) of data from the source server can be migrated to the primary volume *Vol4* of the target server. If you need the data on all the volumes of source server to be migrated to the target server, perform the following:

1. Stop the existing DST policies temporarily before performing migration.
2. Create a project to migrate the data less than or equal to 1 GB/TB (depending on *Vol4* size) from the source server to the target server.
3. Perform the migration.
4. (Conditional) If some files or folders were open on the source server and did not get migrated to the target server, perform synchronization.

   Synchronization must be performed before performing the next step.
5. Configure a DST policy on the target server to move the migrated data from the primary volume to the secondary volume.

   As a result, there is space available on the primary volume of the target server to migrate additional data from the source server.
6. Stop the DST policy after the required data is moved from the primary volume *Vol4* to the secondary volume *Vol5*.
7. (Conditional) If the data size on the source server is greater than the space available on the primary volume of the target server, repeat Step 2 to Step 6 until the entire data is migrated.

   OR

Enable the DST settings to increase the size on the primary volume of the target server to match with the data size on the source server, then perform Step 2 to Step 6 to migrate the data.

Data and Trustee Migration in Active Directory Environment

When performing data or trustee migration in Active Directory environment, you must ensure that on the source server and target server the pool containing NSS volumes is media-upgraded, the NSS volumes are AD-enabled, and trustee rights are assigned on the specific folders or files.

Table 16-1 *Support Matrix in Active Directory Environment*

Source Volume	Target Volume	Data Migration	Trustee Rights	
			eDirectory	Active Directory
AD-enabled	AD-enabled	Success	Success	Success
AD-enabled	Non AD-enabled	Success	Success	Not supported
Non AD-enabled	AD-enabled	Success	Success	Not applicable
Non AD-enabled	Non AD-enabled	Success	Success	Not applicable

Transfer ID

In the Transfer ID scenario a series of tasks are executed for transferring the server identity of the source server to the target server. In the Migration Tool GUI, the file system is configured, then migrated. On successful migration of all of the services, click **Transfer ID**. For more information, see Part IV, “Transfer ID Migration,” on page 59.

Migration Procedure

Use either of the following methods to perform a file system migration:

- “Migrating File System Using GUI” on page 108
- “Migrating File System Using Command Line Utilities” on page 115

Moving Devices for Migrating the Data from NetWare to OES 2015 or Later

You can move devices containing NSS volumes from NetWare to OES server by decommissioning the volumes on the device in the eDirectory, then recommissioning the volumes on the new server. For more information, see the “Moving Non-Clustered Devices From NetWare 6.5 SP8 Servers to OES 2018 SP2” in the *OES 2018 SP3: NSS File System Administration Guide for Linux*.

For shared NSS pools and volumes, OES Cluster Services provides this service automatically during a rolling cluster conversion from NetWare to OES. For information about converting shared pool cluster resources and service resources, see the *OES 2015 SP1: Novell Cluster Services NetWare to Linux Conversion Guide*.

Migrating File System Using GUI

After you have completed the prerequisites procedures in "Preparing for File System Migration" on page 101, you are ready to migrate the source server.

1. Launch the Migration Tool from the target server, using either of the following methods:

   Desktop: Click **Applications > Other > Novell Migration Tools** to launch the Migration GUI.

   Terminal Prompt: Log in as the `root` user and at a terminal prompt, enter `miggui`

2. Enter authentication credentials for the source server.

   (Optional) Is Cluster Resource: This option supports only Migrate scenario and does not support Transfer ID. If you want to migrate data in a cluster environment, you can perform either of the following:

   - **Migrating Cluster Volumes:** In the **Source Server Authentication** screen, specify the cluster resource IP and select the **Is Cluster Resource** option. On configuring file system the Volume Information tab displays all cluster volumes from the cluster resource as part of the source volume.
   - **Migrating Non Cluster Volumes from a Cluster Node:** In the **Source Server Authentication** screen, specify the cluster node IP and do not select the **Is Cluster Resource** option. On configuring file system the Volume Information tab displays all non cluster volumes present on the source server.

3. Enter your authentication credentials for the target server

4. Depending on the type of migration to perform, select the migration type as **Migrate** or **Transfer ID**.

5. In the **Services** panel, click **Add** and select **File System**.

   The **Status** of the file system service is **Not Configured**.

   IMPORTANT: File system is listed in the Service panel list only if it installed and configured on the target server.

   ---

6. To configure migration parameters for the file system, select **File System**, then click **Configure**.

Tabs	Purpose
Volume Information	Identify the volumes or folders that you want to move from the selected source server to a selected target server. By default, all of the data in the volumes or folders that you select for migration in the source server tree is migrated to the target server.
File Options	Customize the files and quotas that are migrating to the target server. You can also specify the home directory location and set options to synchronize the file system.
Trustee Options	You can migrate the trustee rights of the users and groups from the source server to target server. You can also specify the global password for the new users created on the target server. This tab is enabled only in a Different Tree scenario.
Match User Options	You can specify which users to migrate and how to handle the migration if the user already exists on the target server. This tab is enabled when you select the Custom User mapping option in the Trustee Options page.

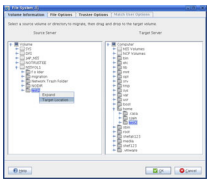
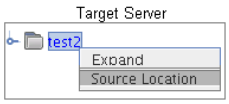
7 In the **Volume Information** tab, in the **Source Server** tree, select volumes or folders that you want to migrate, then drag and drop it in the **Target Server** tree. The names of the source cluster volumes can only include "_" as a special character to be listed in the **Source Server** tree.

IMPORTANT: You cannot migrate a DFS junction. A DFS junction is displayed under the source tree as a folder because this junction appears in the file structure as a directory. Under **Volume Information**, the DFS junction can be dragged to the target server tree, but actually, the junction and the data are not migrated to the target server and migration fails.

On migrating a directory to an existing file system (NSS, NCP volume, or Linux POSIX volume), there are access rights set on the target location that can be inherited by the folder and its contents after migration (either the trustees and trustee rights in the case of NSS and NCP, or the ACLs (access control lists) for Linux POSIX). You must modify the settings as needed to ensure that the files are available only to authorized users before you allow users to access the data in the new location.

In the **Source Server** tree, you cannot expand volumes or folders that are copied to the **Target Server** tree.

For explanation on different tasks that can be performed in the Volume Information tab, refer to the table below, else proceed with default settings to Step 8.

Task	Description
Target Location	After you have selected volumes and folders for migration, you might want to identify the path of the folder or volume moved to the target server. In the **Source Server** tree, right-click the volume or folder that is selected for migration, then click **Target Location** from the drop-down menu. The tree in the **Target Server** view expands to display the volume or folder that was copied from the source server. 
Source Location	After you have selected volumes and folders for migration, you might want to identify the path of the folder or volume moved from the source Server. In the **Target Server** tree, right-click the volume or folder that is highlighted for migration, then click **Source Location** from the drop-down menu. The tree in the **Source Server** view expands to display the volume or folder that was copied to the **Target Server**. 
Volumes or Folders selected for migration	The volumes or folders that are selected for migration are highlighted in blue in the Source Server tree and the Target Server tree.
Removing Volumes or Folders from the Target Server	In the target server tree, right-click the volume or folder that you have decided not to migrate, then select **Undo**. The folder no longer appears under the target server tree and is no longer a candidate for migration.
Follow Cluster Resource	Select this option to perform uninterrupted migration when cluster resources migrate to different cluster nodes. This option is valid only on the source server clusters. For example, when a failure occurs on one node of the cluster, the resources are relocated to another node in the cluster. The migration tool connects to the cluster instead of individual server and performs uninterrupted migration during this failure. If this option is not selected, migration stops when the resource migrates to a different node. When the resource comes up on a different node, run the migration project again, the migration tool ensures that the migration process resumes from the state where it had stopped. On migrating data to cluster volume on the target server, migration stops when the resource migrates to a different node. To continue migration you must make the resource active on the target server.

8 Click the **File Options** tab, then click **OK** to accept the defaults.

or

Use the options to customize the files and quotas to migrate to the target server, then click **OK** to save the settings.

For explanation of the different tasks that can be performed in the File Options page, refer to the Table below.

Task	Description
Duplicate File Resolution	Determines what action to take when a file copied from the source server has the same filename as an existing file on the target server. Specify one of the following resolutions: ◆ **Always Copy Source File (default):** The migrated file always overwrites the existing file. ◆ **Never Overwrite Existing File:** The file from the source server is not migrated, if a file of the same name exists on the target server. ◆ **Copy if Newer:** The migrated file overwrites the existing file on the target server, only if its last modified date is newer than the existing file's date. This option is applicable only for data migration.
Quotas	This option is applicable only for data migration. **NOTE:** If you are migrating to a different file system (NSS to NCP volumes or from NSS to Linux POSIX volumes) on the target server, user quotas and directory quotas are not valid. ◆ **Exclude User Quotas on Source:** The user quotas from the source server are not copied to the target server. ◆ **Exclude Directory Quotas on Source:** The directory quotas from the source server are not copied to the target server. ◆ **Disable Quota Checks on Target:** The user and directory quotas set on the target server are ignored by the migration tool on performing data copy.
File Filters	Determines which files to include for migration. If no filters are set, all files are migrated. You can specify the files that you want to migrate by specifying the date range or you can exclude the files from migrating by specifying the filenames or file extensions. ◆ **Last Accessed/ Last Modified:** The date range to include files for migration. ◆ **Exclude File(s):** The filenames or file extensions to exclude from migration. Wildcards (*) are permitted. For example: `*.mp3`, `*.mov`, `*.tmp`, `samplefile.txt`, "`my sample file.txt`." Specifying `*.mp3` excludes all files with an extension of `.mp3` from being migrated. Specifying `samplefile.txt` excludes all samplefile.txt from being migrated.

Task	Description
Home Directory Options	Specify the target server path for the users whose home directory you are migrating from the source server. For example, If the users's home directory path on the source server is `/media/nss/VOL1/users` and the target path where the users will be migrated is `/media/nss/VOL2/users`, then specify the path in the Home Directory Options as `/media/nss/VOL2/users`. On successful migration, the home directory of the users is updated with the new target server path. **NOTE:** If you are performing migration across multiple volumes, you cannot specify multiple home directory paths.
Sync Options	The **Sync** option performs synchronization of the target server with the source server. After completion of file system migration, if the source server is updated with new information, you can use the **Sync** option for synchronizing the servers. The **Sync** option is available in the main Migration GUI window. **Delete Files Not On Source:** During synchronization of the servers, additional files or folders on the target servers are deleted that are not available on the source server. **Delete Trustees Not On Source:** This option is enabled only for same tree migration. Set this option to update trustee information on target server when trustees are deleted on the source volume on completion of migration or synchronization. Trustee information that is not on the source server is deleted from the target server. **Copy Trustees Only At The Directory Level:** Synchronizes trustees only at the directory level. Trustees for files are not synchronized. **Do Not Copy Trustees:** The user rights on the source server folders are not synced to the target server.
Login Options	This option indicates whether you want users to be logged in during the data migration. **Disable Login On Source:** If you disable user login, the users cannot log in to the network and modify the open files during the file copy. Users already logged in to the source server are not logged out, but no new logins are allowed until the migration completes.

9 Click the **Trustee Options** tab, then click **OK** to accept the defaults and migrate the trustee rights of users and groups on the source server to target server.

or

Use the options to customize the files trustee options to migrate to the target server, then click **OK** to save the settings.

For explanation on different tasks that can be performed in the **Trustee Options** tab, refer to the table below.

NOTE: In the Same Tree scenario, the **Trustee Options** tab is disabled.

Task	Description
Trustee Migration	Specify an option to migrate trustee rights of users and groups from the source server to the target server. ◆ **Do Not Migrate Trustees (default):** The user rights to the access folder on the source server are not migrated to the target server. ◆ **Flatten Trustees:** The users on the source server are migrated to a selected context on the target server, irrespective of whether the users are in a different context on the source server. ◆ **Target Context to flatten the users:** Select the context on the target server to migrate all the users. ◆ **Custom User Mapping:** Users on the source volume are mapped with the users on the target server. When you select this option, the **Match User Options** tab is enabled, which enables you to select the users from the source server or the target server, and then assign migration options. ◆ **Search Context to map users:** Select the context on the target server to match the users.
Existing User Options	A username on the source server has a corresponding username on the target server. You can overwrite the trustee details of the user on the target server, or ignore the user. ◆ **Ignore All:** Do not create users on the target server. ◆ **Overwrite All:** Overwrite the users on the target server.
New User Options	Specify the global password for the new users created on the target server. **eDirectory Password:** Specify the password for the users to use, when they log in for the first time on the target server. **IMPORTANT:** If password restrictions are set for users on the source tree, you must specify a default password, else migrating users in a different tree scenario might fail.

10 (Conditional) If the **Match User Options** tab is enabled, click it, then continue with Step 10a to specify which users to migrate and how to handle the migration if the user already exists on the target server.

or

If the **Match User Options** tab is not enabled, click **OK** to save your file system migration setup and return to the main Migration Tool window then continue with Step 12.

10a To view the list of users on the source server and target server, click **Map Users**, then select how to handle the users.

NOTE: In a migration project, if you select multiple volumes for migration that are associated with same users, then on mapping users the source displays duplicate user list.

- **Existing or Mapped Users:** A username on the source server has a corresponding username on the target server. If the users are mapped, only the trustee details are migrated.
- **New Users:** Users do not exist on the target server. Create new users on the target server, or ignore the users.

10b This is a global setting for all the users. Specify one of the following options to migrate users or ignore users.

- **Ignore All:** Do not migrate the new users. Only existing users are migrated to the target server.
- **Create All:** Create all users on the target server.

10c (Optional) To specify settings for individuals and groups that override the global handling of user migration, click the username, then assign one of the migration options from the drop-down menu:

- **Create:** Create users on the target server and assign the trustee rights.

  The users are created on the target server that is using the same FDN as the source server. The search context is used only to match the source server users to target server users in that context.
- **Ignore:** Ignore the user and do not assign the trustee rights of the source user.
- **Browse:** Assign an equivalent user by browsing the same context or a different context on the target server and assigning trustee rights.

11 After you have finished configuring the parameters in each tab, click **OK** to save your file system migration setup and return to the main Migration window.

12 Click **Migrate** on the main migration window to begin the migration.

The log files for the file system are located at `/var/opt/novell/migration/<project name>/log`. Following log files are created during file system migration:

filesystem.log: This stores the information about the command sequence and errors encountered during migration.

filesystem.success.log: This stores the list of all successfully migrated files.

filesystem.delete.log: This stores list of files deleted from the target server which are not available on the source server when performing sync. This log file is updated with list of deleted files, if you have selected the option **Delete Files Not On Source** in the **File Options** tab.

Synchronizing File System Using Migration GUI

On performing synchronization, the service details (data, trustee etc) on the target server is compared with the source server and the updated information is migrated to the target server. You can perform synchronization in the following two scenarios:

- "Same Tree" on page 114
- "Different Tree" on page 115

Same Tree

On successful migration, you are ready to perform synchronization for any new or modified files or trustee rights.

1. Launch the Migration Tool on the target server.
2. Open the migration project that you need to perform synchronization.

The status of the file system is “Migrated on <Date and Time of successful migration>”.

3 Authenticate the source server and target server.

4 (Conditional) You can modify only few options for file system. In the **Services to Migrate** panel, select File System, then click Configure. In the **File system** GUI, **File Options** tab only the **Duplicate File Resolution**, **Login Options**, and **Sync Options** are enabled and can be modified.

5 In the main **Migration Tool** GUI, click **Sync**.

All the new or modified files or trustee rights on the source server are migrated to the target server.

Different Tree

On successful migration, you are ready to perform synchronization for any new or modified files or trustee rights.

1 Launch the Migration Tool from the target server.

2 Open the migration project that you need to perform synchronization.

The status of the file system is “Migrated on <Date and Time of successful migration>”.

3 Authenticate the source server and target server.

In the **File system** GUI, **File Options** tab only the **Duplicate File Resolution**, **Login Options**, and **Sync Options** are enabled and can be modified.

3a (Conditional) In the **Trustees Options** tab, if you have selected the **Custom User Mapping** option, you must remap the users on the source volume with the users on the target volume in the **Match User Options** tab.

4 In the main **Migration Tool** GUI, click **Sync**.

All the new or modified files or trustee rights on the source server are migrated to the target server.

Migrating File System Using Command Line Utilities

This section provides information on how to use the command line to migrate a file system running on supported source servers to target server.

NOTE: All the migration commands must be run on the target server.

This section covers the following scenarios:

- “Migrating Data to a Server in the Same Tree” on page 116
- “Migrating Data to a Server in a Different Tree” on page 117
- “Migrating Data to a POSIX File System” on page 123
- “File System Migration Commands” on page 125
- “Additional Migration Options” on page 139

Migrating Data to a Server in the Same Tree

This section describes how to migrate file system data from source server to target server in the same eDirectory tree.

- "Migrating the Data" on page 116
- "Examples" on page 116
- "Limitations" on page 117

Migrating the Data

`migfiles` is command to migrate files and directories. If you need to modify the home directories of the migrated users, you also need to use `mls`, `maptrustees`, and `migtrustees`.

1. (Conditional) If you need to modify the home directories of the migrated users, run the following command:

   ```
   mls
   ```

2. Run the `migfiles` command to copy the data from the source server to the target server.
3. (Conditional) If you need to modify the home directories of the migrated users, run the following commands in the order specified:

   ```
   maptrustees
   migtrustees
   ```

Examples

The following examples illustrate ways to use the various options available for the migration commands.

- "Volume-to-Volume Migration" on page 116
- "Directory-to-Directory Migration" on page 116
- "Volume-to-Directory Migration (NSS Volume to NCP Directory)" on page 117
- "Remapping Home Directories" on page 117

Volume-to-Volume Migration

This command migrates all data from the Traditional or NSS volume SRCVOL1 on the source server with the IP address 192.168.1.3 to the target server's TGTVOL1 volume with verbose output:

```
migfiles -s 192.168.1.3 -V SRCVOL1 -v TGTVOL1 -i
```

Directory-to-Directory Migration

This command migrates data from the Traditional or NSS path `DATA:impstuff` on the source server with the IP address 192.168.1.3 to the `stuff` directory on the NSS volume NSS1 with verbose output:

```
migfiles -s 192.168.1.3 -V DATA:impstuff -x /media/nss/NSS1/stuff -i
```

Volume-to-Directory Migration (NSS Volume to NCP Directory)

This command migrates data from the Traditional or NSS volume named DATA on the source server with the IP address 192.168.1.3 to the `newdir` directory on the NCP volume NCP1 located at path `/data/ncp1` without verbose output:

```
migfiles -s 192.168.1.3 -V DATA -x /data/ncp1/newdir
```

Remapping Home Directories

These commands migrate the VOL1 volume on source server 192.168.1.3 to the VOL1 volume on target server 192.168.1.4. The `-H` option in the `maptrustees` command is used to remap the home directories of the users to the target server.

1. Create a list of files and associated rights on the source volume:

   ```
   mls -s 192.168.1.3 -V VOL1 > mls.yaml
   ```

2. Copy the data from the source volume to the target volume:

   ```
   migfiles -s 192.168.1.3 -V VOL -x /media/nss/VOL1 -i
   ```

3. Map the trustees and home directories from the source server to the target server:

   ```
   maptrustees -s 192.168.1.3 -H /media/nss/VOL1/users/--map-homedir-only
   mls.yaml> maptrustees.yaml
   ```

   The `-H` option is a path to the base directory that includes all the home directories.

4. Migrate the information generated in the previous step:

   ```
   migtrustees -d 192.168.1.4 -m maptrustees.yaml
   ```

Limitations

If you have user space restrictions set on a source NSS volume, the restrictions are migrated to target NSS volumes if you do a full volume migration.

Migrating Data to a Server in a Different Tree

When the source server and target servers are in different eDirectory trees, your file system user and group trustees must be migrated from the source tree to the target tree, along with their associated data. The `maptrustees` and `migtrustees` commands are used to migrate users and groups assigned as trustees in the source tree to the target tree. Alternatively, you can use Novell Identity Manager to migrate the eDirectory users and groups, and then use the `migmatchup` command to match the user from the source server to the target server. Use the `maprights` and `migrights` commands only if the user and the group structure has changed during the migration.

- "Migrating the Data" on page 118
- "Examples" on page 118
- "Limitations" on page 121

Migrating the Data

The main command to use is `migfiles`. To map the trustees (users and groups) from the source tree to the target tree, you need to use `mls`, `maptrustees`, and `migtrustees`. If you are reorganizing the trustees (migrating to a different context), you also need to use `mls`, `maprights`, and `migrights` to map the trustee rights.

To migrate the data from a source NetWare server or OES server in one eDirectory tree to the target Linux server in another tree:

1. You can either migrate the source server trustees to the target server or map the source server trustees with the target server.
   - To migrate the trustees, run the following commands in the order shown:

     ```
     mls
     maptrustees
     migtrustees
     ```
   - To map the trustees, run the following commands in the order shown:

     ```
     mls
     ```

     ```
     migmatchup
     ```
2. Run the `migfiles` command to copy the data from the source to the target server.
3. (Conditional) If you are migrating users and groups to a different context or matching the user with different name, run the following commands in the order shown:

   ```
   maprights
   migrights
   ```

Examples

- “Tree-to-Tree Migration Using the Migration Tool to Migrate Trustees” on page 118
- “Tree-to-Tree Migration Using the Migration Tool to Migrate Trustees and Flatten the Trustee Structure” on page 119
- “Tree-to-Tree Migration with Trustees Already Migrated to the New Tree and Reorganized in the New Tree.” on page 121

Tree-to-Tree Migration Using the Migration Tool to Migrate Trustees

The following example shows how to migrate data from a source NetWare server in one tree to a target server in another tree. In this example, the target volumes are NSS volumes, and the users are to be migrated to the same context in the target tree.

1. Create a list of files and trustees on volume V1 on the source server with IP address 192.168.1.3:

   ```
   mls -s 192.168.1.3 -V V1 > mls.yaml
   ```
2. Map the trustees on the source server and output the list to a file:

   ```
   maptrustees -s 192.168.1.3 -H /media/nss/VOL1/users/ mls.yaml >
   maptrustees.yaml
   ```

The `-H` option replaces the home directory of the source server user with the new home directory specified by -H option. The `-H` option is a path to the base directory that includes all the home directories. If the users don't have home directories, this option doesn't need to be used.

3 Migrate the trustees to the target server:

```
migtrustees -d 192.168.1.67 --specific-password novell maptrustees.yaml
```

If you want to assign each user a random password, use `--random-password` option, it stores the passwords in a file. To avoid password theft, dispose of the password file in a secure manner after you have communicated the new passwords to their respective users.

4 (Conditional) When migrating to an NCP Linux volume, if you want to preserve file ownership in the target tree, you should LUM-enable the migrated users before continuing. For information about LUM-enabling users, see "LUM Implementation Suggestions" in the *OES 2018 SP3: Planning and Implementation Guide*.

5 Migrate the data from source volume V1 to target NSS volume VOL1:

```
migfiles -s 192.168.1.3 -V V1 -x /media/nss/VOL1/ -i
```

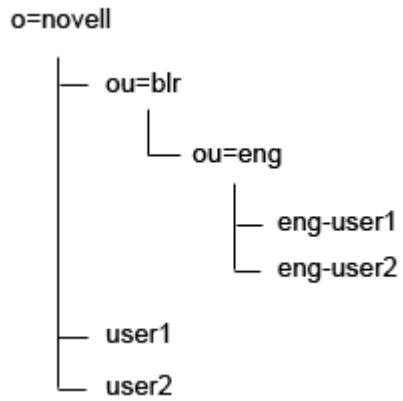
After the users have been migrated (this only needs to be done once), additional data volumes can be migrated. Repeat Step 1 to Step 5 to migrate other volumes on the source server.

Tree-to-Tree Migration Using the Migration Tool to Migrate Trustees and Flatten the Trustee Structure

The `maptrustees` command includes a `-k` option that allows you to migrate users to a different context in the target tree. When you do this, the container hierarchy is flattened.

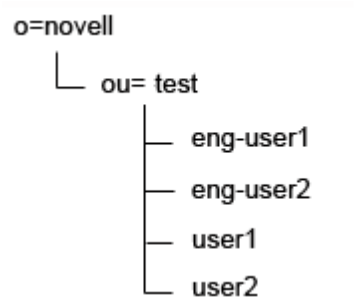
For example, suppose your source eDirectory tree looks like the one shown in Figure 16-1.

Figure 16-1 *Source eDirectory Tree Structure*



When the users are migrated to ou=test.o=novell, the resulting tree structure is shown in Figure 16-2.

Figure 16-2 *Target eDirectory Tree Structure*



The following example shows how to migrate data from a source server in one tree to a target server in another tree. In this example, the target volumes are NCP Linux volumes and the new user context is `ou=new-context.o=company`.

1. Create a list of files and trustees on volume SRCVOL on the source server with IP address 192.168.1.3:

   ```
   mls -s 192.168.1.3 -V SRCVOL > mls.yaml
   ```

2. Map the trustees on the source server and output the list to a file:

   ```
   maptrustees -s 192.168.1.3 -H /usr/novell/NCP1/homes/ -k 'ou=new-context,o=company' mls.yaml > maptrustees.yaml
   ```

   The `-H` option replaces the home directory of the source server user with the new home directory specified by -H option. The `-H` option is a path to the base directory that includes all the home directories. If the users don't have home directories, this option doesn't need to be used.

3. Migrate the trustees to the target server:

   ```
   migtrustees -d 192.168.1.67 --specific-password novell maptrustees.yaml
   ```

   If you want to assign each user a random password, use `--random-password` option, it stores the passwords in a file. To avoid password theft, dispose of the password file in a secure manner after you have communicated the new passwords to their respective users.

4. (Conditional) When migrating to an NCP Linux volume, if you want to preserve file ownership in the target tree, you should LUM-enable the migrated users before continuing. For more information on LUM-enabling users, see "LUM Implementation Suggestions" in the *OES 2018 SP3: Planning and Implementation Guide*.

5. Migrate the data from source volume SRCVOL to target NCP Linux volume NCP1:

   ```
   migfiles -s 192.168.1.3 -V SRCVOL -x /usr/novell/NCP1/ -i --no-trustees
   ```

   After the users have been migrated (this only needs to be done once), various data volumes can be migrated. Repeat Step 1 to Step 5 to migrate other volumes on the source server.

6. Map the trustee rights on the source server:

   ```
   maprights -V SRCVOL -k ou=new-context,o=company -x /usr/novell/NCP1/ mls.yaml > maprights.yaml
   ```

7. Migrate the trustee rights to the target server:

   ```
   migrights -i maprights.yaml
   ```

   Repeat Step 1, Step 6, and Step 7 to migrate trustee rights for each source volume being migrated.

Tree-to-Tree Migration with Trustees Already Migrated to the New Tree and Reorganized in the New Tree.

The following example shows how to migrate data from a source NetWare server in one tree to a target server in another tree. In this example, the target volume is an NSS volume, and the users have already been migrated by using tools like NetIQ Identity Manager so that they now reside in different contexts in the target tree. In this example, the migration tool is used only to migrate the data and map the trustees correctly.

1. Create a list of files and trustees on volume V1 on the source server with IP address 192.168.1.3:

   ```
   mls -s 192.168.1.3 -V V1 > mls.yaml
   ```

2. Match the users on the source server to the users on the target server:

   ```
   migmatchup -s 192.168.1.3 -d 192.168.1.67 -k 'ou=re-org,o=company'
   mls.yaml > migmatchup.yaml
   ```

   migmatchup searches for the trustees in their source context. If it doesn't find a matching trustee, it searches the container specified with the -k option recursively and matches the first trustee with the same name. If the trustee with the same name is not found, it is not matched.

   If the trustee name is changed, then the output of migmatchup can be edited so that each source trustee is mapped to the corresponding user on the target tree.

3. (Conditional) When you are migrating to a NCP Linux volume, if you want to preserve file ownership in the target tree, you should LUM-enable the migrated users before continuing. For more information on LUM-enabling users, see "LUM Implementation Suggestions" in the *OES 2018 SP3: Planning and Implementation Guide*.

4. Migrate the data from source volume SRCVOL to target NSS volume TGTVOL:

   ```
   migfiles -s 192.168.1.3 -V SRCVOL -x /media/nss/TGTVOL/ -i --no-
   trustees
   ```

   After the users have been migrated (this only needs to be done once), various data volumes can be migrated. Repeat Step 1 to Step 4 migrate other volumes on the source server.

5. Map the trustee rights on the source server:

   ```
   maprights -V SRCVOL --matchup-file migmatchup.yaml -x /media/nss/
   TGTVOL/ mls.yaml > maprights.yaml
   ```

6. Migrate the trustee rights to the target server:

   ```
   migrights -i maprights.yaml
   ```

   Repeat Step 5 and Step 6 to migrate trustee rights for each source volume being migrated.

Limitations

Following are the limitations when performing tree-to-tree migrations:

- If users have home directories on a volume that is migrated, the Home Directory attribute is changed only for users who are assigned as trustees or belong to the groups that are assigned as trustees.
- If the `maptrustees` and `migtrustees` commands are used to migrate the users then the following User Object attributes are migrated:
  - Common Name (CN)

- Country
- Description (description)
- E-mail Address (mail)
- Fax Number (facsimileTelephoneNumber)
- Full Name (fullName)
- Generational Qualifier (generationQualifier)
- Given Name (givenName)
- Initials (initials)
- Language (Language)
- Locality Name (l)
- Lockout After Detection (lockedByIntruder)
- Login Allowed Time (loginAllowedTimeMap)
- Login Disabled (loginDisabled)
- Login Expiration Time (loginExpirationTime)
- Login Grace Limit (loginGraceLimit)
- Login Grace Remaining (loginGraceRemaining)
- Login Intruder Limit (loginIntruderAttempts)
- Login Maximum Simultaneous (loginMaximumSimultaneous)
- Login Script (loginScript)
- Network Address Restriction (networkAddressRestriction)
- Organizational Name (o)
- Organizational Unit Name (ou)
- Password Allow Change (passwordAllowChange)
- Password Expiration Interval (passwordExpirationInterval)
- Password Expiration Time (passwordExpirationTime)
- Password Minimum Length (passwordMinimumLength)
- Password Required (passwordRequired)
- Password Unique Required (passwordUniqueRequired)
- Physical Delivery Office Name (physicalDeliveryOfficeName)
- Post Office Box (postOfficeBox)
- Postal Address (postalAddress)
- Postal Code (postalCode)
- State or Province Name (st)
- Street Address (street)
- Surname (sn)
- Telephone Number (telephoneNumber)
- Title (title)

- When LUM-enabled users are migrated to a new tree, they are no longer LUM-enabled.
- Data and trustee migration in NSS AD environment is not supported.

Migrating Data to a POSIX File System

This section provides information on migrating data from source NSS volumes to a POSIX file system such as EXT3 or Reiser on a target server.

- "Mapping Users, Groups, and File Attributes to POSIX" on page 123
- "Example" on page 124
- "Limitations" on page 125

Mapping Users, Groups, and File Attributes to POSIX

In this type of migration, eDirectory users and groups are migrated to POSIX. The `useradd` and `groupadd` commands are used to create the POSIX users and groups corresponding to their eDirectory equivalents, and the NetWare file attributes are mapped to the POSIX rwx permissions.

Objects in eDirectory with an objectClass of Organization, groupOfNames, or organizationUnit are mapped to POSIX groups. Those with objectClass organizationalPerson are mapped to POSIX users.

Because POSIX user and group names are more restrictive than eDirectory object names, the following conventions are used to map the common name (cn) of the objects to POSIX:

- Names with 32 or more characters are truncated to 31 characters in length.
- Characters not belonging to the POSIX portable character class ([A-Za-z_] [A-Za-z0-9_-.] * [A-Za-z0-9_-.$]) are replaced by an underscore (_) character.

For more details about POSIX names, see the man page for the `useradd` command.

NetWare file attributes are mapped as shown in Table 16-2.

Table 16-2 *Mapping NetWare Attributes to POSIX Permissions*

NetWare Attribute	POSIX Permissions
No attributes set	`rw_ ___ ___`
Read Only and Hidden	`___ ___ ___`
Read Only	`r__ ___ ___`
Hidden	`_w_ ___ ___`

For directories, the execute bit for the owner is set.

NOTE: These mappings are based on NetWare attributes, not trustee rights. Administrators should evaluate the post-migration POSIX permissions and make adjustments as necessary to maintain suitable data security for users.

1. Run the `migfiles` command to copy the data from the source to the target server.
2. (Conditional) If you need to modify the home directories of the migrated users, run the following three commands in the order specified:

   ```
   mls
   maptrustees
   migtrustees
   ```

3. Run the following commands in the order shown:

   ```
   mls
   maprights
   migrights
   ```

Example

The following example shows how to migrate data to a POSIX file system.

1. Create a list of files and trustees on volume SRCVOL:

   ```
   mls -s 192.168.1.3 -V SRCVOL > mls.yaml
   ```

2. Map the trustees on the source server and output the list to a file:

   ```
   maptrustees -s 192.168.1.3 -p -H /data/home/ mls.yaml >
   maptrustees.yaml
   ```

   The -H option replaces the home directory of the source server user with the new home directory specified by -H option. The -H option is a path to the base directory that includes all the home directories. If the users don't have home directories, this option doesn't need to be used.

3. Migrate the trustees to the target server:

   ```
   migtrustees -p --specific-password novell maptrustees.yaml
   ```

   If you want to assign users with random password, use the `--random-password` option, it stores the new passwords in an output file. To avoid password theft, dispose of the password file in a secure manner after you have communicated the new passwords to their respective users.

4. Migrate the data from the volume SRCVOL on the source server with IP address 192.168.1.3 to the target POSIX path:

   ```
   migfiles -s 192.168.1.3 -V SRCVOL -x /path/to/copy --no-trustees -pi
   ```

   Substitute the desired target POSIX path for `/path/to/copy`.

   Users must be migrated before migrating data volumes. Repeat Step 1 to Step 3 for migrating trustees.

5. Map the trustee rights on the source server:

   ```
   maprights -p -V SRCVOL1 -x /path/to/copy -m maptrustees.yaml mls.yaml >
   maprights.yaml
   ```

6. Migrate the trustee rights to the target server:

```
migrights -p maprights.yaml
```

Repeat Step 4, Step 5, and Step 6 for each source volume being migrated.

Limitations

Sparse files are copied as normal files when migrated from NSS to POSIX. This is because of a known limitation from the POSIX perspective. Sparse files are generally supported on restore by restoring the data areas to sparse locations in the file system. The file system then determines whether or not to preserve the sparse nature of the file. POSIX file systems do not preserve the sparse nature of sparse files.

File System Migration Commands

The migration tool include several command line tools for file system migrations. Each tool performs a subtask of the migration by taking the required input and outputting the converted output or results to stdout. Table 16-3 lists the commands that are available for file system migrations.

Table 16-3 *File System Migration Commands*

Command	Description
`mls`	Lists all files in source NSS path, with associated trustees, rights, and quotas.
`migmatchup`	Matches users and groups from the source server to the target server.
`maptrustees`	Maps users and groups from the source server to the target server specifications.
`migtrustees`	Creates users and groups on the target server based on the output generated by the `maptrustees` command.
`migfiles`	Copies files and folders from a source server to a target server.
`maprights`	Maps NetWare NSS/Traditional or OES NSS file system rights to OES 2015 or later file system rights.
`migrights`	Sets file rights on the target server as defined by the output from the `maprights` command.
`migcred`	Establishes persistent credentials for the migration utilities.

The sections that follow discuss these commands and their options in greater detail. You can also refer to the respective man page for each command or use the `-h` (`--help`) and `--usage` options.

mls

The `mls` command lists files and associated trustees, rights, and quotas from source servers. The output from this command is used as input for both `maprights` and `maptrustees`.

To gather the required information for NetWare Traditional or NSS volumes, `mls` copies `tcnvlnx.nlm` to the NetWare server. To gather this information for OES NSS volumes, it uses the `.trustee_database.xml` file in the `._NETWARE` directory.

Syntax

`mls` -s -V|-X [--continue-after-failover] [-e] [-c] [--precheck] [--update-ifnewer] [--progress] [--progress-interval] [--use-casa] [--source-unsecure-ldap] [--source-ldap-port] [--debug] [--modified-after] [--modified-before] [--accessed-after] [--accessed-before] [--no-dirquotas] [--no-userquotas]

Options

Option	Long Form	Purpose
`-s`	`--source-server`	Specifies the source server's IP address. Example: `-s 192.168.1.3`
`-V`	`--source-path`	Specifies the volume or directory path to use on the source server. Examples: `-V NSSVOL` -V VOL1:/apps/data
-X	--source-full-path	Indicates the full path of the volume to use on the source server.
	--continue-after-failover	Specifies that mls continues migration after a resource failover.
-e	--exclude	Excludes filter on files to be copied. Use this multiple times for excluding multiple file types (eg. -e "`*.mp3`" -e "`*.tmp`").
	[--use-casa]	Uses OCS to store and retrieve usernames and passwords.
	--source-unsecure-ldap	Uses unsecure LDAP connection for all LDAP calls. By default mls uses secure LDAP.
	--source-ldap-port	Uses the specified port for LDAP calls. By default, it uses port number 389 for unsecure LDAP and 636 for secure LDAP.
[-c]	--session-file --progress --progress-interval --debug --precheck	These options are explained in the Additional Migration Options.
	--modified-after	Scans files which are modified after this date.
	--modified-before	Scans files which are modified before this date.
	--accessed-after	Scans files which are accessed after this date.
	--accessed-before	Scans files which are accessed before this date.
	--no-dirquotas	Directory quota information is not listed.
	--no-userquotas	User quota information is not listed.

migmatchup

The `migmatchup` command uses input from the `mls` command to produce a mapping of users and groups from the source server to those on the target server. It uses `ldapsearch` to retrieve the user and group data from the source and destination LDAP server.

Objects can be excluded from migration by specifying them in the global `/etc/opt/novell/migration/obj-exclude-list.conf` file or a custom exclude file can be specified using the -E option. The global exclude file has entries to not migrate NetWare specific user like "cn=admin,ou=Tomcat-Roles,*". If a custom exclude file is specified then the global exclude file is not read.

Syntax

```
migmatchup -s -d -k [-E] [-c] [--progress] [--progress-interval] [--debug] [--precheck] [--use-casa] [--source-unsecure-ldap] [--source-ldap-port] [--destination-unsecure-ldap] [--destination-ldap-port] <inputfile>
```

Options

Option	Long Form	Purpose
-s	--source-server	Specifies the source server's IP address.
-d	--destination-server	Specifies the target server's IP address.
-k	--destination-ldap-container	Options to specify LDAP container to be searched for finding matching users and groups.
-E	--obj-exclude-file	Excludes the objects listed in this file from migration. The entries can contain pattern with wild cards * and ?. Refer to the object exclude file `/etc/opt/novell/migration/obj-exclude-list.conf` for more details.
-c	--session-file	These options are explained in the Additional Migration Options.
	--progress	
	--progress-interval	
	--debug	
	--precheck	
	[--use-casa]	Uses OCS to store and retrieve usernames and passwords.
	--source-unsecure-ldap	Uses unsecure LDAP connection for all LDAP calls. By default migfiles uses secure LDAP.
	--source-ldap-port	Uses the specified port for LDAP calls. By default, it uses port number 389 for unsecure LDAP and 636 for secure LDAP.
	--destination-unsecure-ldap	Uses unsecure LDAP connection for all LDAP calls. By default migfiles uses secure LDAP.
	--destination-ldap-port	Uses the specified port for LDAP calls. By default, it uses port number 389 for unsecure LDAP and 636 for secure LDAP.

Option	Long Form	Purpose
	inputfile	Indicates the output file produced from the `mls` command from stdin.

Example

This example illustrates matching users and groups from source server to a target server:

```
migmatchup -s 192.168.1.3 -d 192.168.1.4 -k o=company mls.yaml
```

maptrustees

The `maptrustees` command maps the users and groups from the source server's tree or domain to the target server's specifications. It uses input from `mls` to produce and map user and group data from the source server. You must use `maptrustees` when migrating data to a different tree or when migrating users and groups to a different context.

By default, `maptrustees` maps users and groups into a new target tree. The target file server should be in the same tree as the LDAP target server. You can use the `-k` option to map users and groups into a single target container.

The `maptrustees` command can also be used to map users and groups to POSIX users and groups in `/etc/passwd` and `/etc/group`. It uses `ldapsearch` to retrieve the user and group data from the source LDAP server. The source LDAP server should be in the same tree as the source file server that produced the `mls` output.

Syntax

```
maptrustees -s [-H] [--map-homedir-only] [-p] [-k] [--matchup-file] [-g] [-E] [--use-casa] [--source-unsecure-ldap] [--source-ldap-port] [--debug] [--precheck] [-c] [--progress] [--progress-interval] <inputfile>
```

Options

Option	Long Name	Purpose
`-s`	`--source-server`	Specifies the source server's IP address. Example: `-s 192.168.1.3`
`[-H]`	`--homedir`	Specifies the path to the directory for migrating user's home directories. This option is used to map users' home directories to the new path on the target server. Example: `-H /media/nss/nssvol1/homedir`
	[--map-homedir-only]	This option is used when source and destination servers are in same tree. This option forces maptrustees to generate only home directory information of users, so that migtrustees can just modify home directories of users. You must also pass --homedir(-H) option along with this option.
`[-p]`	`[--posix]`	Maps users and groups to `/etc/passwd` and `/etc/group` on the OES server. Default is LDAP, if no mapping option is specified.

Option	Long Name	Purpose
[-k]	[--destination-ldap-container]	Specifies the container where all users and groups are to be migrated. Example: `-k ou=merged,o=company`
	--matchup-file	Specify a user matchup file as generated by migmatchup.
[-g]	[--primary-group]	Specifies the primary POSIX group for migrated users. If not specified, the default primary group is “users.” Example: `-g migrated-users` The specified group must be created before you run the `migtrustees` command, because `migtrustees` does not create the group.
	[--use-casa]	Uses OCS to store and retrieve usernames and passwords.
	--source-unsecure-ldap	Uses unsecure LDAP connection for all LDAP calls. By default migfiles uses secure LDAP.
	--source-ldap-port	Uses the specified port for LDAP calls. By default, it uses port number 389 for unsecure LDAP and 636 for secure LDAP.
[-E]	[--obj-exclude-file]	Excludes from migration the objects listed in the specified file. Example: `-E excludefile.txt` If this option is used, the global exclude file is not read. See “Excluding Objects” on page 130 for more information.
[-c]	--session-file --progress --progress-interval --debug --precheck	These options are explained in the Additional Migration Options.
	inputfile	Indicates the output file produced from the `mls` command or from stdin.

Examples

- This first example illustrates mapping users and groups to the same container in the target tree as in the source tree:

  ```
  maptrustees -s 192.168.1.3 mls.yaml
  ```

  The example assumes you have the same tree structure in the target tree as in the source tree.

- This next example illustrates mapping users and groups to a new container in the target tree, using the output from the `mls` command:

  ```
  maptrustees -s 192.168.1.3 -k ou=merged,o=company mls.yaml
  ```

  A new container named ou=merged,o=company is created in the target tree, and all migrated users and groups are created within that container.

- This third example illustrates mapping users to `/etc/passwd` and `/etc/group` in a POSIX environment and redirect the output to `maptrustess.yaml` file:

  ```
  maptrustees -s 192.168.1.3 -p mls.yaml > maptrustees.yaml
  ```

Excluding Objects

When generating the list of users and groups to be mapped to the target tree, `maptrustees` reads the `obj-exclude-list.conf` file in the `/etc/opt/novell/migration/` directory and excludes the eDirectory objects listed in that file.

The global exclude file includes entries for NetWare objects, such as cn=admin,ou=Tomcat-Roles.

If you find that objects are being migrated from your source eDirectory tree that you do not want to appear in the target tree, you can add the objects to the `obj-exclude-list.conf` file. Use fully distinguished object names in LDAP (comma-delimited) format. For example:

```
cn=testuser,ou=users,o=novell
```

NOTE: NCP Server objects that are assigned as file system trustees are not migrated in a tree-to-tree migration.

migtrustees

The `migtrustees` command uses input from `maptrustees` to create users and groups in the target tree. It uses `ldapadd` and `ldapmodify` to make the changes on the target LDAP server.

If the `-p` (`--posix`) option has been specified in `maptrustees`, `migtrustees` uses `useradd` and `groupadd` to create users and groups in `/etc/passwd` and `/etc/group`.

If the `-g` (`--primary-group`) option was specified in `maptrustees`, the specified group must already exist or it must be created before running `migtrustees`.

Syntax

```
migtrustees -d [-i] [-A] [-m] [-p] [-r] [--use-casa] [--destination-
unsecure-ldap] [--destination-ldap-port] [--debug] [--precheck] [-c] [--
progress] [--progress-interval] [--specific-password] [--newusers-
password-file] <inputfile>
```

Options

Option	Long Form	Purpose
`-d`	`--destination-server`	Specifies the target server's IP address (not needed for POSIX migrations). Example: `-d 192.168.1.5`
`[-i]`	`[--verbose]`	Prints verbose information regarding the user and group migration status.
`[-A]`	`[--audit]`	Audits the results of the user and group migration.

Option	Long Form	Purpose
[-m]	[--modify-existing]	Modifies or updates users or groups if they already exist. If you do not include the -m option, the migtrustees command displays user exists errors if a User object being migrated is already present in the target eDirectory tree. In this case, no modifications are made to the User object in the target tree.
[-p]	[--posix]	Creates POSIX users and groups on destination server. Default is LDAP.
	[--use-casa]	Uses OCS to store and retrieve usernames and passwords.
	--destination-unsecure-ldap	Uses unsecure LDAP connection for all LDAP calls. By default, migfiles uses secure LDAP.
	--destination-ldap-port	Uses the specified port for LDAP calls. By default, it uses port number 389 for unsecure LDAP and 636 for secure LDAP.
[-c]	--session-file --progress --progress-interval --debug --precheck	These options are explained in the Additional Migration Options.
[-s]	--specific-password	Specify the password for newly created users. You must note the password so that it can be forwarded to individual users. If the specific password or random password option is not specified, then the users are created but locked until you assign a password.
[-r]	--random-password	Generate random passwords for new users created on the target server. When using this option, you must always pass the --newusers-password-file option so that the randomly generated passwords and usernames are stored in the file.
	--newusers-password-file	The newly created usernames along with passwords are stored in the file specified with this option. This option must be passed with the --random-password option. If the specified file exists, migtrustees appends the file else it creates a new file with read-only permission.
	inputfile	Indicates the output file produced from the maptrustees command or from stdin.

Examples

- To migrate users and groups to a target tree, using an LDAP server with the IP address of 192.168.1.4 in the target tree:

  ```
  migtrustees -d 192.168.1.4 -s novell maptrustees.yaml
  ```

- To audit the outcome of a trustee migration:

  ```
  migtrustees -d 192.168.1.4 -A -s novell maptrustees.yaml
  ```

- To migrate users and groups to POSIX with verbose information:

  ```
  migtrustees -i -p -s novell maptrustees.yaml
  ```

migfiles

The `migfiles` command copies files from NetWare Traditional or NSS volumes to target NSS, NCP, or POSIX paths. It uses the Storage Management Services (SMS) framework to migrate file data and metadata.

When the migration is between two servers in the same eDirectory tree, `migfiles` copies the trustees and rights information along with the file data. When migrating data to a server in a different tree, `migfiles` copies only the file data. You must use other commands such as `mls`, `maptrustees`, `migtrustees`, `maprights`, and `migrights` to migrate the trustees and rights information.

Syntax

```
migfiles -s [-p] [-i] -v|-x -V|-X [--continue-after-failover] [--disable-login] [-P] [-e] [--exclude-path] [-c] [--no-trustees] [--trustees-only] [--delete-existing-trustees] [--use-casa] [--source-unsecure-ldap] [--source-ldap-port] [--debug] [--precheck] [--progress] [--progress-interval] [--demigrate-files] [--never-overwrite] [--update-ifnewer] [--modified-after] [--modified-before] [--accessed-after] [--accessed-before] [--usecodeset] [--no-dirquotas] [--no-userquotas] [--sync] [--delete] [--delete-file-on-restore-error] [--ignore-quota-checking] [--trustees-dirs-only]
```

General Options

Option	Long Form	Purpose
`-s`	`--source-server`	Specifies the source server's IP address. Example: `-s 192.168.1.3`
`[-p]`	`[--posix]`	Specifies that the target is a POSIX path. (If not specified, the default target type is NCP over POSIX.).
`[-i]`	`[--verbose]`	Prints verbose file migration status.
`-V`	`--source-path`	Specifies the source path, in VOLNAME or VOLNAME:/path format. Example: `-V NSSVOL -V VOL:apps/data -V winshare`
	@srcpathfile	Specifies the source file that includes multiple source paths and is prefixed with a symbol (@). Example: `-V @srcpathfile`
`-v`	`--destination-path`	Specifies the volume on the target server where the files are copied. This option cannot be used with the `-x` option. Example: `-v VOL1`

Option	Long Form	Purpose
-x	--destination-full-path	Specifies the target path for copying NSS, NCP, or POSIX data. This option cannot be used with the -v option. Example: -x /media/nss/TEST
	@destpathfile	Specifies the target file that includes corresponding target paths and is prefixed with a symbol (@). Example: -x @destpathfile
-X	--source-full-path	Specifies the source path for copying NSS, NCP, or POSIX data. This option cannot be used with the -V option. Example: -X /media/nss/TEST
	--continue-after-failover	Specifies that migfiles continue migration after a resource failover.
	--disable-login	New logins to source server are disabled during data migration.
	--never-overwrite	Do not overwrite files that already exist on the target server.
[-e]	[--exclude]	Sets an exclude filter on files to be copied. Use this option multiple times to exclude multiple file types. Example: -e "*.mp3" -e "*.tmp"
	--exclude-path	Excludes the directory with the specified source path from migration. Use this multiple times for excluding multiple directories or files.
	[--use-casa]	Uses OCS to store and retrieve usernames and passwords.
	--source-unsecure-ldap	Uses unsecure LDAP connection for all LDAP calls. By default, migfiles uses secure LDAP.
	--source-ldap-port	Uses the specified port for LDAP calls. By default it uses port number 389 for unsecure LDAP and 636 for secure LDAP.
[-c]	--session-file --progress --progress-interval --debug --precheck	These options are explained in the Additional Migration Options.
	--no-trustees	Do not migrate trustees.
	--trustees-only	Migrate only the trustees. New trustees added to the source server are migrated to the target server.
	--delete-existing-trustees	Trustees that do not exist on the source server are deleted from the target server. You must use this option with --trustees-only option.
	--demigrate-files	Migrates the data of HSM migrated files. By default, only stubs are migrated.
	--update-ifnewer	Updates the file on the target server with the new data from the file on the source server.

Option	Long Form	Purpose
-u	--modified-after	Migrates files which are modified after this date.
	--modified-before	Migrates files which are modified before this date.
	--accessed-after	Migrates files which are accessed after this date.
	--accessed-before	Migrates files which are accessed before this date.
	--usecodeset	Code page value of the source server. This option is applicable only for NetWare 5.1 server.
	--no-dirquotas	Do not migrate directory quotas.
	--no-userquotas	Do not migrate user quotas.
	[--sync]	Synchronizes source server and target server. Migrates files from the source server that are not available on the target server or is modified after the date given.
	[--delete]	Synchronizes source server and target server. You must use this option with --sync option. Files that do not exist on the source server are deleted from the target server.
	[--delete-file-on-restore-error]	Deletes partially restored or 0 byte files that are created during synchronization.
	--ignore-quota-checking	Disables quota checking on the target server. When migration is completed, migfiles enables quota checking.
	--trustees-dirs-only	Synchronizes trustees only at the directory level. Trustees for files are not synchronized. This option must be used only with the --trustees-only option or with the sync options.

NetWare to Linux Migration Options

The following options can be used only in NetWare-to-Linux migrations.

Option	Long Form	Purpose
`[-c]`	`[--session-file]`	Stores the migration's progress, including the date and time of the migration, the source and target IP addresses, and the source and target volume names, in the specified session file. Example: `-c "status.log"` This file can be used to resume a previously halted migration job. If an absolute or relative path is not specified with the filename, `migfiles` searches the current working directory for the file. If the specified file does not exist, all files are migrated. See "Multi-Session Migration" on page 135 for more information.

Option	Long Form	Purpose
[-u]	[--update]	Migrates files newer than the date specified with this option. See "Updating Modified Files" on page 136 for more information. This option supports date/time inputs in the following formats: "%d-%m-%Y %H:%M:%S" "%d-%m-%Y %H:%M" where d, m, Y, H, M, and S are format variables of standard Linux date/time implementations. The supported formats can be extended by using the DATEMSK environment variable. The DATEMSK environment variable must be sent to the file path pointing to the date/time formats to support. See getdate(1) and strptime(3) for more information on using DATEMSK.
	[--no-trustees]	Excludes trustees while migrating file system data.
	[--demigrate files]	Migrates the data of HSM-migrated files. By default, only stubs are migrated.
	[--update-ifnewer]	Updates the file if the file on the source server is newer than the file on the target server. This option is applicable only for data migration.

Multiple Source Path Migration

This command migrates the source paths listed in the source file `srcpathfile` to corresponding target paths listed in the target file `destpathfile`. Pass the `srcpathfile` with -V and `destpathfile` with -x option prefixed with a symbol (@). The sample IP address is *192.168.1.3* of the source server.

Source Paths in srcpathfile	Target Paths in destpathfile
DATA:DEPT/finance	/media/nss/DATA/finance
DATA:DEPT/legal	/media/nss/DATA/legal

```
migfiles -s 192.168.1.3 -V @srcpathfile -x @destpathfile -i
```

Progress Indicator

While the `migfiles` command is running (without the `-i` option), a pound (#) character is displayed for every 100 files migrated.

Multi-Session Migration

The `-c` or `--session-file` option of the `migfiles` command allows you to stop the migration partway through and then continue it later from where it left off. This is especially useful when migrating large data volumes that might take several working days to copy and that must remain online during the migration.

For example, the following command stores the migration's progress and other metadata in a session file named `V1-to-V1 090907`:

```
migfiles -s 192.168.1.3 -v VOL1 -V VOL1 -ni -c "V1-to-V1 090907"
```

To terminate the migration session at any time, press Ctrl+C. You can resume the session later by reentering the `migfiles` command by passing the same session file `V1-to-V1 090907`

Updating Modified Files

Another useful option for the `migfiles` command is the `-u` or `--update` option. This option lets you specify a date and time, then `migfiles` copies only files that have been modified after this date and time. This option must be used after completing a multi-session migration described above to update all the files modified by users during the migration. The session file contains the data and time at which the migration started.

For example, the following command updates all the files on the target volume that have been modified at the source after 9 September 2008 at 12:30:

```
migfiles -s 192.168.1.3 -v V1 -V V1 -ni -u "9-09-2007 12:30"
```

maprights

The `maprights` command gleans file system rights information from the `mls` output and maps the rights to a specified volume or path on the target server. You can specify a mapping to NSS, NCP, or POSIX rights.

If the target server is in a different tree and users and groups are in new containers, you can use the `-k` option to migrate the users and groups into a specified container in the target eDirectory tree.

Syntax

```
maprights -V [-p] -v|-x [-k] [--matchup-file] [-m] [--debug] [--precheck]
[-c] [--progress] [--progress-interval] <inputfile>
```

Options

Option	Long Form	Purpose
`-V`	`--source-path`	Specifies the volume or directory path to use on the source server. Examples: `-V NSSVOL` -V VOL1:/apps/data
`[-p]`	`[--posix]`	Maps user rights to POSIX file system access rights.
`-v`	`--destination-path`	Specifies the volume on the target server where the rights information is mapped. This option cannot be used with the `-x` option. Example: `-v NSSVOL`
-x	`--destination-full-path`	Specifies the volume path on the target server where the rights information is mapped. You must use `-x` in `maprights` if you have used `-x` in `migfiles`.

Option	Long Form	Purpose
[-k]	[--destination-ldap-container]	Specifies an eDirectory container where all users and groups are to be migrated. You must use -k in maprights, if you have used -k in maptrustees. Example: -k ou=users,o=company
	[--matchup-file]	Specify a user matchup file as generated by migmatchup.
[-m]	[--maptrustees-file]	Specifies the name of the maptrustees file associated with this maprights migration (required for POSIX rights mapping). Example: -m maptrustees.yaml
	inputfile	Indicates the name of the output file produced from the mls command or from stdin.
[-c]	--session-file --progress --progress-interval --debug --precheck	These options are explained in the Additional Migration Options.

migrights

The migrights command uses input from maprights to set file rights on the target server. All details for setting rights are stated in the input file. migrights uses this information to set the rights appropriately on the target file system.

Syntax

```
migrights [-i] [-A] [-t] [-p] [--debug] [--precheck] [-c] [--progress] [--progress-interval] <inputfile>
```

Options

Option	Long Form	Purpose
[-i]	[--verbose]	Prints verbose rights migration status.
[-A]	[--audit]	Audits the results of the file rights migration.
[-t]	[--test]	Performs a test run of the rights migration operation.
[-p]	[--posix]	Indicates that the destination path is POSIX.
[-c]	--session-file --progress --progress-interval --debug --precheck	These options are explained in the Additional Migration Options.
	inputfile	Indicates the output file produced by the maprights or from stdin.
	[--debug]	Prints debug messages to the migrights log file located at /var/opt/novell/log/migration/.

Examples

- To set rights on the target file system with verbose output:

  ```
  migrights -i maprights.yaml
  ```

- To audit the outcome after setting rights on the target file system:

  ```
  migrights -i -A maprights.yaml
  ```

- To perform a test run with the output from maprights and see if the files and users exist in the target tree. The test results are being directed to migrights-t.yaml:

  ```
  migrights -i maprights.yaml -t > migrights-t.yaml
  ```

migcred

The migcred command can be used to store and retrieve credentials for the other file system migration commands. It uses --use-casa command to store credential details of an identity. A migcred identity can be a server IP address. With each identity, a type of user name (for example, LDAP, NDS Distinguished Name, or e-mail name) is stored along with an associated password.

Syntax

```
migcred -i -l|-n|-N|-c|-o|-e [-w] [-r] [-d] [--debug]
```

Options

Option	Long Form	Purpose
-i	--id	Specifies the identity or key to identify the credential. Example: -i 192.168.1.3
-l	--ldap-dn	Specifies credential details in LDAP format. Example: -l cn=admin,o=company
-n	--nds-dn	Specifies credential details in NDS_DN format. Example: -n admin.company
-N	--nds-fdn	Specifies credential details in NDS_FDN format. Example: -N cn=admin.o=company
-c	--cn	Specifies credential details in Common Name (CN) format. Example: -c John Smith
-o	--other	Specifies credential details in a non-specified format.
-e	--email	Specifies credential details as an e-mail address. Example: -e admin@company.com
[-w]	[--password]	Retrieves a stored password.
[-r]	[--retrieve]	Retrieves credential details of an identity.
[-d]	[--delete]	Deletes the credentials of an identity.
	[--debug]	Print debug messages to the migcred log file. The log file is located at /var/opt/novell/log/migration/

Examples

- This example illustrates storing the credential details of identity 192.168.1.3 in LDAP format. The command prompts for credential details, which should be entered in LDAP format (cn=admin,o=mycompany):

  ```
  migcred -i 192.168.1.3 -l
  ```

- This example illustrates retrieving credentials after they have been stored:

  ```
  migcred -i 192.168.1.3 -l -r
  ```

- This example illustrates deleting credential details of identity 192.168.1.3:

  ```
  migcred -i 192.168.1.3 -d
  ```

Additional Migration Options

The Migration Tool provides additional options to be executed with file system migration utilities.

You can execute these commands with file system migration utilities. Table 16-4 lists the additional options that are available for file system migrations.

Table 16-4 *Additional Migration Options with File System Commands*

Option	Description
`--session-file`	Stores migration progress. This file is used to continue migration.
`--progress`	Displays the progress (in terms of percentage) of the command being executed.
`--progress-interval`	Specifies the time interval for displaying the progress of a command.
`--debug`	Executes the command in a debug mode and creates a log file.
`--precheck`	Validates the arguments passed in a command.

Session File

A session file stores the status of a command, checkpoint information of a command (the point at which the execution of command was stopped), and parameters for validating the session file. You can create a session file by executing a command with `--session-file` option.

An example to create a session file for the `migfiles` command:

```
migfiles -s 192.168.1.3 -iV src_volume -v dest_volume --session-file /home/
migfiles_session.session
```

This command migrates data from the source NSS volume `src_volume` to the target NSS volume `dest_volume`. You can stop the command and re-execute it at a later stage. On executing the command at a later stage, the `migfiles_session.session` file is taken as an input and the `migfiles` command starts at the point when it was last stopped.

For example, your source volume contains 50 GB of data and after migrating 40 GB of data, migration was stopped. On re-executing the `migfiles` command, the remaining 10 GB of data is migrated.

Sample Session File:

```
src-server: 192.168.1.3
dest-server: 192.65.1.2
src-path: "DFS:"
dest-path: "/media/nss/VOL1/"
started-on: "18-7-2008 16:8:15"
status: stopped
stopped-at: "DFS:db/"
Bytes Processed: 22
```

Progress

The `--progress` command can be executed with any command to display the progress of the command being executed.

To view progress on executing the `migtrustees` command:

```
migtrustees -d 192.168.1.3 maptrustees.yaml -i --progress
```

Output of the command:

```
Created 200 trustees of 500
```

When you execute the `migtrustees` command with the `--progress` option, it displays the progress of trustee creation. You can set the time to display the progress by specifying the `--progress-interval` option.

Progress Interval

The `--progress-interval` option is used along with `--progress` option to specify the time interval for displaying the progress of a command. The default time interval is 30 seconds for refreshing the progress of a command.

To view progress every 10 seconds on executing the `migtrustees` command:

```
migtrustees -d 192.168.1.3 maptrustees.yaml -i --progress --progress-interval 10
```

The migtrustees command refreshes the progress every 10 seconds.

Debug

The `--debug` option executes the command in debug mode and creates a log file in `/var/opt/novell/log/migration` folder.

To execute `mls` command in debug mode:

```
mls -s 192.168.1.3 -V src_volume --debug
```

This command creates an `mls.log` file that is stored in the `/var/opt/novell/log/migration` folder.

Precheck

The `--precheck` option validates the arguments passed in a command.

To execute the `migfiles` command:

```
migfiles -s 192.165.1.1 -iV src_volume -v dest_volume --precheck
```

On executing this command, the `--precheck` option validates the existence of the src_volume and dest_volume on the source server and the target server. The command authenticates to the source server and target server and also checks if SMS is running on the target server.

Troubleshooting

- "Same Tree Scenario" on page 142
- "Different Tree Scenario" on page 143
- "General Issues" on page 143

Same Tree Scenario

- "The Migration Tool File System GUI, Volume Information Tab Displays Empty Boxes for Non-English Directory Names." on page 142
- "Error nbackup: open file" on page 142
- "Error nbackup: execute only files" on page 142
- "Error nbackup: A file cannot be read and nbackup: Failed to read dataset" on page 142

The Migration Tool File System GUI, Volume Information Tab Displays Empty Boxes for Non-English Directory Names.

In the migration tool file system GUI, Volume Information tab displays empty boxes for non-english directory names.This issue occurs if the corresponding language is not installed on the source server.

To install fonts for non-english languages, run `yast2 language`, and select languages in the Secondary Languages pane. After installing required languages, restart the migration project.

Error nbackup: open file

Open files on the source server are not migrated. If files are open, they are not migrated because this causes data inconsistencies.

Close the files and then perform migration.

Error nbackup: execute only files

nbackup encountered files with the Execute-only bit set. By default, these files are not copied.

If you want to copy the Execute-only files, use the `tsafs /ExcludeExecuteOnly=0` setting on the source NetWare server.

Error nbackup: A file cannot be read and nbackup: Failed to read dataset

Source volumes or the target volumes are unavailable or are renamed during migration.

Do not rename volumes when migration is in progress. If migration stops because a volume is unavailable, ensure that the volume is properly activated and mounted, then restart the migration project.

Different Tree Scenario

- "Ownership Information is Changed on Migrating from NSS to NCP" on page 143

Ownership Information is Changed on Migrating from NSS to NCP

If the ownership information is changed on migrating from NSS to NCP, make sure you LUM-enable the users that are migrated into the target eDirectory tree before you run the `migfiles` command.

If you LUM-enabled the users that were migrated into the target eDirectory tree and still don't see the proper ownership information (for example, the owner is nobody as viewed in POSIX, or the server name as viewed by the Novell Client), try the following:

1. At the OES server terminal prompt, enter `namcd cache_refresh`.
2. Synchronize the eDirectory replicas by using DSREPAIR.
3. Enter `nsscon /resetidcache`.
4. To verify the information of the owner, enter:

   ```
   ls -l /usr/novell/NCP1
   ```

General Issues

- "File System Migration Fails with FATAL error: nbackup command failed to complete" on page 143
- "File System Migration Fails When TSAFS is Set to Netware Mode on a OES11 Server" on page 144
- "When You Configure the File System GUI, an Error is Displayed that the Volumes on the Source Server (NetWare 6.0 or Later) are Not Mapped" on page 144
- "When You Start Migration, an Error is Displayed and Migration Fails" on page 145
- "Migration Fails Due to Failure of the migtrustees Command" on page 145
- "Not Getting the Code Page and Non-English Characters" on page 146
- "Source Cluster Volumes are Not Displayed" on page 146
- "Files or Trustees are Not Synchronized" on page 146

File System Migration Fails with FATAL error: nbackup command failed to complete

There might be two admin users in the system (local admin user and eDirectory admin user). The failure was caused because the local admin user which does not have permission was trying to perform file system migration.

To resolve this issue, delete or rename the local admin user, then perform file system migration.

File System Migration Fails When TSAFS is Set to Netware Mode on a OES11 Server

To resolve this issue, set the parameter `tsamode` to `Linux` in the `/etc/opt/novell/sms/tsafs.conf` file.

When You Configure the File System GUI, an Error is Displayed that the Volumes on the Source Server (NetWare 6.0 or Later) are Not Mapped

If the Novell Client fails, the volumes on the source server are not mapped. The file system migration does not depend on the Novell Client commands, but it uses `nwmap` to map the source volumes. The details of the error is logged in `/var/opt/novell/migration/<project name>/log/filesystem.log`.

To troubleshoot this issue, perform the following:

1. Verify the status of the Novell Client by entering the following command:

   ```
   rcnovfsd status
   ```

   1a. If the service is running, restart the service by entering the following command:

   ```
   rcnovfsd restart
   ```

   or

   If the service is not running, start the service by entering the following command:

   ```
   rcnovfsd start
   ```

   1b. To configure the file system, select the file system and click **Configure**.

2. (Conditional) If the error is displayed again, verify the status of novell-xregd service by entering the following command:

   ```
   rcnovell-xregd status
   ```

   2a. If the status is running, restart the service by entering the following command:

   ```
   rcnovell-xregd restart
   ```

   or

   If the status is not running, start the service by entering the following command:

   ```
   rcnovell-xregd start
   ```

   2b. Restart the Novell Client by entering the following command:

   ```
   rcnovfsd restart
   ```

   2c. To configure the file system, select the file system and click **Configure**.

3. (Conditional) If the error is displayed after restarting novfsd and novell-xregd services, refer to the log file to verify if the Novell Client has failed to resolve the IP address.

   3a. If the IP address was not resolved, create a `/etc/opt/novell/ncl/protocol.conf` file and add the following line in it: `Name_Resolution_Providers=NCP,SLP,DNS`

   3b. Restart the Novell Client by entering the following command:

   ```
   rcnovfsd restart
   ```

   3c. To configure the file system, select the file system then click **Configure**.

When You Start Migration, an Error is Displayed and Migration Fails

When you click **Start** in the main migration window, migration fails and you receive the error that no data sets are found.

- "Source Server is OES 2 SP3 or OES 11" on page 145

Source Server is OES 2 SP3 or OES 11

Migration might fail if there is some problem during the setup and zapi is not loaded on the source server. To troubleshoot this issue, perform the following:

1. Verify that zapi is loaded on the source server by executing the following command:

   ```
   lsmod | grep zapi
   ```

2. (Conditional) If zapi is displayed in the list then update the zapi.
3. (Conditional) If zapi is not displayed in the list, restart SMDR.

   ```
   novell-smdrd restart
   ```

4. Click on Start, to start the migration.

Migration Fails Due to Failure of the migtrustees Command

The `migtrustees` command fails with a fatal error which is recorded in the `filesystem.log` file.

The `migtrustees` command takes input from the `maptrustees.yaml` file, which includes various attributes. Some special characters are included in the loginScript attribute of the `maptrustees.yaml` file which is not recognized by the `migtrustees` command causing failure in migration.

To troubleshoot this issue, perform the following steps:

1. Open the iManager page on the source server.
2. Click **Users > Modify Users**.
3. Select the username, which has special characters in the login script.

   For example, if you see the error for *cn=testuser,ou=users,o=novell* in the `filesystem.log` file, select *testuser* from the user list.
4. Click **General > loginScript**.
5. Remove the special characters from the login script.
6. Click on **apply** then **ok**.
7. Remove the `migtrustees.session`, `maptrustees.session` and the `maptrustees.yaml` files from the `/var/opt/novell/migration/<Project name>/fs/` folder of the target server.

   This ensures that we re-execute the `maptrustees` command when continuing the migration process.
8. Click **Start** on the main Migration Tool window of the target server to continue migration.

Not Getting the Code Page and Non-English Characters

- “Migrating from Netware 6.5 or Later” on page 146

Migrating from Netware 6.5 or Later

The language pack is not installed on the target server, so the code page and the non-English characters are not displayed.

You need to install the language pack of the source server on the target server before starting the migration tool.

Source Cluster Volumes are Not Displayed

This issue occurs because the **Is Cluster Resource** option is not selected in **Source Server Authentication** or the cluster resource is down.

If the **Is Cluster Resource** option is not selected, select the option from **Source Server Authentication**, then reconfigure.

or

If the **Is Cluster Resource** option is selected and the cluster volumes are not displayed, verify the list of cluster volumes by executing the following command:

```
/opt/novell/sms/bin/smstool --list-cluster-volumes -R <resourceIP> -U
<admin_credentials>
```

Files or Trustees are Not Synchronized

If files are open on the source server during synchronization, those files are not synchronized with the files on the target server. If trustees are deleted on the source server during or before synchronization, the trustees are not migrated. Ensure that you verify the following before synchronizing, then click **Sync**.

- No application or user is accessing the source volumes that are being copied.
- Select **disable login** in the file system GUI to restrict access to the source volumes.

VII Service Migration

- Chapter 17, “Migrating eDirectory to OES 2018 SP3,” on page 149
- Chapter 18, “Migrating AFP to OES 2018 SP3,” on page 155
- Chapter 19, “Migrating CIFS to OES 2018 SP3,” on page 161
- Chapter 20, “Migrating DHCP to OES 2018 SP3,” on page 173
- Chapter 21, “Migrating DNS to OES 2018 SP3,” on page 187
- Chapter 22, “Migrating DSfW to OES 2018 SP3,” on page 193
- Chapter 23, “Migrating LUM to OES 2018 SP3,” on page 197
- Chapter 24, “Migrating FTP to OES 2018 SP3,” on page 199
- Chapter 25, “Migrating iPrint to OES 2018 SP3,” on page 205
- Chapter 26, “Migrating NetStorage to OES 2018 SP3,” on page 235
- Chapter 27, “Migrating NTP to OES 2018 SP3,” on page 239
- Chapter 28, “Migrating NCP to OES 2018 SP3,” on page 241
- Chapter 29, “Migrating OpenSLP to OES 2018 SP3,” on page 243
- Chapter 30, “Migrating Proxy users to OES 2018 SP3,” on page 245

17 Migrating eDirectory to OES 2018 SP3

eDirectory migration to Open Enterprise Server (OES) 2015 or later requires the migration of the eDirectory data and server identity to provide seamless accessibility after migration.The eDirectory migration utility performs all of the pre-migration tasks, health validations and server backups, server migration, and post-migration tasks for you.

The following sections give you more details on the migration procedure for eDirectory:

- "Planning Your Migration" on page 149
- "Migration Tools" on page 151
- "Migration Procedure" on page 151
- "After the Migration" on page 152

Planning Your Migration

This section lists the important requirements that must be verified before attempting eDirectory migration.

IMPORTANT: If the eDirectory version is 8.7.3.6 or earlier on the NetWare server, you must backup the `sys:/system/backupcr.nlm` file.

On performing migration from Netware to OES 2015 or later, the `backupcr.nlm` on NetWare server is overwritten with the newer version. In case of failure, restore the `backupcr.nlm`.

- "System Requirements" on page 149
- "Prerequisites" on page 150
- "Supported Platforms" on page 150
- "Considerations" on page 150
- "Troubleshooting" on page 150

System Requirements

- ❒ The target server must run OES 2018 SP3 with the migration pattern selected.
- ❒ OES 2015 or later does not support multiple instances of eDirectory on the same server, so any non-default instances should not be running during migration
- ❒ The source server should be running and should not be part of any partition operation. For more information on supported source server versions, refer to the "eDirectory Coexistence and Migration" in the *OES 2018 SP3: Planning and Implementation Guide*.

Prerequisites

- ❒ The eDirectory migration utility can run only on the target server and must be able to access the source server remotely.
- ❒ All servers that share a replica with the server to be restored are up and communicating. This allows the restore verification process to check with servers that participate in the same replica ring.

  For more information, see "Preparing for a Restore" in the *NetIQ eDirectory Administration Guide*.

Supported Platforms

The eDirectory migration utility is designed to run on OES 2015 or later, which is the target platform for migration. For more information on the compatible eDirectory versions at the source and the corresponding target servers, refer to the "Prerequisites" on page 41 and "Support Matrix for NetWare and OES Services" on page 18.

Considerations

- IP address and DNS migrations are not performed by this migration utility.
- Only the eDirectory instance is migrated. Applications depending on eDirectory are not migrated by this utility.
- You should not use this migration methodology if you want both the servers to be available during the migration operation.

NOTE

Only the target server is available after the Transfer ID migration. The eDirectory DIB on the source server is locked. Other service migrations cannot be performed after completing Transfer ID migration for eDirectory. The source server can be brought back by restarting the eDirectory server, but you should do this only if the Transfer ID migration is unsuccessful.

Troubleshooting

- "Migration Issue" on page 150

Migration Issue

If the source server is running eDirectory 8.6.2, the following error is encountered:

```
The NDS schema in this tree is out of date. You must run ndsrepair to
correct it. Please consult the readme for further instructions. ERROR -722:
Setup for NDS installation failed. Please make certain that you have
provided the complete server and admin contexts.
ERROR: /opt/novell/eDirectory/bin/ndsconfig return value = 78.
```

To workaround this issue, do the following:

On the master eDirectory 8.6.2 server, run `dsrepair`, **Advanced Options Menu > Global Schema Operations**, then select **Post NetWare 5 Schema Update > Yes**.

Migration Tools

The eDirectory migration can be performed independently or by using the OES migration framework. The complete migration task is performed by invoking the migedir command line utility.

Migration Procedure

1 Run the migedir utility by entering the following command on the target server:

```
migedir [-A <log directory name>] [-s <IP address>] [-t] [-h] [-i] [-u]
[-a] [-w] [-B] [-R]
```

The utility takes the following command line options:

Option	Description
-A *directory name*	Enables auditing. *directory name* specifies the directory in which log files should be created.
-s *IP address*	Specifies the IP address of the source server containing the eDirectory instance to be migrated. **IMPORTANT:** *-s* is a mandatory parameter.
-t	Tests the validity of the input parameters. **NOTE:** This option verifies the IP address; however, it does not perform the actual migration.
-h	Prints help about using this utility.
-i	Enables the verbose mode.
-u	Enables the unattended mode.
-a	Specifies the tree adminDN.
-w	Specifies the admin password.
-B	Enables the Backup Only mode.
-R	Enables the Restore Only mode.

2 Follow the on-screen instructions as the utility performs the migration.

The migration utility does some pre-migration checks, performs the migration, then does some post-migration tasks.

- “Pre-migration” on page 152
- “Migration” on page 152
- “Post-migration” on page 152
- “Handling Failures” on page 152

Pre-migration

The utility performs the following checks:

- The health and state of the replicas in the ring are verified.
- Time synchronization is verified between the source and target servers.

Migration

The utility performs the migration of the eDirectory instance from the collected configuration information. This involves backing up the source server data, locking the eDirectory instance in the source server, migrating data to the target server, and restoring the eDirectory instance on the target server. The dependent NICI files are also migrated.

Post-migration

After migration, the following tasks are performed by the utility:

- The `nds.conf` configuration file is modified with the source server eDirectory instance information, such as tree name and server name.
- The eDirectory instance in the target server is restarted so it can use the new data.
- Network address repair is performed to start the synchronization of the new IP address in the replica ring.

Handling Failures

During migration, the database in the source server is locked to avoid multiple copies of the instance running on the source and target servers. Multiple copies of the same instance can lead to data inconsistency. If the process fails and if you intend to bring up the source server again, you need to perform the following tasks:

1. Remove the partially migrated eDirectory instance on the target server.

   For more information on removing the eDirectory instance from a server, see Removing a Server Object And Directory Services From a Tree in the *NetIQ eDirectory Installation Guide*.
2. Bring up the source server by reloading the directory services. Make sure that the source server is brought up on the network only when the migration fails. The database backup and log files are saved in the `SYS:\` folder.

After the Migration

After migration, the target eDirectory instance listens on the IP address of the target server and not on the source server's address. It requires additional time after migration for the eDirectory instance to synchronize the new IP address in the replica ring. Successful eDirectory migration can be verified by performing eDirectory operations on the new IP address.

If you want to use the existing security certificates, you must change the IP address of the target server to that of the source server. If you don't want to do this, you must issue new certificates.

NOTE: If you change the IP address of the target server after migration, you must modify the `nds.conf` file, restart the eDirectory instance, and repair the network address and partitions replica manually. For more information on repairing eDirectory instance, see DSRepair Options in the NetIQ eDirectory Administration Guide.

18 Migrating AFP to OES 2018 SP3

Migration refers to the process of migrating the AFP services to target OES 2018 SP3.

For general information about the OES Migration Tool, see the Chapter 1, “Overview of the Migration Tools,” on page 15

The following sections give you more details on the migration procedure for AFP.

- “Migrating AFP from Netware to OES 2018 SP3” on page 155
- “Migrating AFP to OES 2018 SP3” on page 158

Migrating AFP from Netware to OES 2018 SP3

In these sections, the NetWare server is referred to as the source server and the OES 2018 SP3 server as the target server.

- “Requirements” on page 155
- “Migration Scenarios” on page 155
- “Migration Procedure” on page 156
- “Verifying the Migration Process” on page 157
- “Cross-Platform Issues” on page 157

Requirements

Make sure your source server and target server meet the following requirements:

Source Server Requirements

- NetWare 6.5 SP8

Target Server Requirements

- OES server with AFP. For instructions see, instructions in “Installing and Setting Up AFP” in the *OES 2018 SP3: OES AFP for Linux Administration Guide*.
- The NSS data should be already migrated. For details see, Chapter 16, “Migrating File Systems to OES 2018 SP3,” on page 101

Migration Scenarios

AFP supports the following migration scenarios:

- Migrating Servers through Server Consolidation
- Migrating Servers through Transfer ID

For more information about these scenarios, see “Migration Scenarios” on page 16.

NOTE: AFP does not support migration across different eDirectory trees. However, it can be achieved by using the Different Tree scenario to migrate the file system, then reconfiguring AFP on the target server:

For details, see “Migrating Data to a Server in a Different Tree” on page 117 and “Installing and Setting Up AFP” in the *OES 2018 SP3: OES AFP for Linux Administration Guide*

Migration Procedure

Migrating the AFP configuration is done by using the Migration Tool or through the command line interface.

NOTE: Before migration, manually edit `afptcpd.conf` file and set the number of threads within the valid range. For more information, see “Modifying Thread Range” on page 156.

- “Modifying Thread Range” on page 156
- “Using the Migration Tool to Migrate” on page 156
- “Using Command Line Utilities to Migrate” on page 156

Modifying Thread Range

Beginning with OES 2015, the valid thread range is changed to as follows:

Minimum threads: 3 to 32, default value: 3

Maximum threads: 4 to 512, default value: 32

Before migration, manually edit `afptcpd.conf` file and set the number of threads within the valid range and proceed with the migration procedure. If it is not changed and the minimum or maximum threads is out of the range, then AFP server will use default number of threads.

Using the Migration Tool to Migrate

1. Click **Applications > Other > Novell Migration Tools** to access the Migration Tool Utility.
2. Authenticate to the source and target servers.
3. Select **Novell AFP**, then click **Configure**. The AFP configuration window is displayed.
4. Click **Migrate** to begin the migration process.

Using Command Line Utilities to Migrate

To run the AFP migration utility through the command line, run `migafp` with the following parameters:

Table 18-1 *migafp Command Line Parameters*

Parameter	Description
`-h`	Prints a summary of the migration process
`-s`	IP address of the source server
`-u`	DN of the source tree admin. For example: `cn=user, o=company`)
`-w`	Admin password to authenticate to the source server

For example:

`migafp -s` *`10.10.10.1`* `-u` *`cn=sourceadmin.o=novell`* `-w` *`password`*

Verifying the Migration Process

1. Ensure that all the context details from `sys:/etc/ctxs.cfg` (NetWare context file) are migrated to `/etc/opt/novell/afptcpd/afpdircxt.conf` (OES 2015 or later server context file).
2. Verify by running the command `rcnovell-afptcpd start`.

Cross-Platform Issues

AFP on Linux uses Universal Password as the authentication mechanism instead of the Simple Password authentication mechanism on NetWare. During migration from NetWare to Linux, the simple passwords on the NetWare system are synchronized to the Universal Password, so that the user can authenticate seamlessly to the AFP service on the Linux server.

This feature is restricted based on the following conditions:

- To synchronize the password of a first-time login user, authentication must happen using Diffie Hellman Exchange-2, Diffie Hellman Exchange, or Clear-text authentication method. To set the type of authentication, ensure that the authentication method (AUTH_UAM) option in `/etc/opt/novell/afptcpd/afptcpd.conf` file is set to DHX2, DHX, cleartext.

  The automatic password synchronization will not occur if the user authenticates by using the Random Exchange or Two-way Random Exchange method of authentication.
- If you use the Diffie Hellman Exchange-2, Diffie Hellman Exchange, or Clear-text authentication method, the eDirectory service (ndsd) must be started with the environment variable NDSD_TRY_NDSLOGIN_FIRST set to TRUE.

If the above conditions are not met, all the users with Simple Passwords are required to manually authenticate to the AFP server on NetWare after they are enabled for Universal Password, in order to trigger the password synchronization to Universal Password.

Migrating AFP to OES 2018 SP3

This section describes how to migrate AFP from an OES source server to OES 2018 SP3 target server.

Before you proceed with the migration, review “Prerequisites” on page 158.

- “What is Migrated” on page 158
- “Prerequisites” on page 158
- “Modifying Thread Range” on page 158
- “Migration Procedure” on page 158
- “Verifying Migration” on page 159

What is Migrated

- Server configuration information
- Volume Aliases information
- Contexts

Prerequisites

- OES server is already installed and AFP is configured. For details, see *OES 2018 SP3: OES AFP for Linux Administration Guide*.
- NSS Pools and volumes are already migrated to the new OES 2018 SP3 server from supported OES server. Use the cluster migrate `resource_name node_name` command to migrate the cluster pools and volumes. For details, see “Using the Cluster Migrate Command” in the *OES 2018 SP3: OES Cluster Services for Linux Administration Guide*.
- Non-cluster NSS volumes are already migrated to the new OES 2018 SP3 server from supported OES server. This can be done by unmounting the corresponding file system from the source machine and mounting it on the target machine.
- Before migration, manually edit `afptcpd.conf` file and set the number of threads within the valid range. For more information, see “Modifying Thread Range” on page 158.

Modifying Thread Range

Beginning with OES 2015, the valid thread range is changed to as follows:

Minimum threads: 3 to 32, default value: 3

Maximum threads: 4 to 512, default value: 32

Before migration, manually edit `afptcpd.conf` file and set the number of threads within the valid range and proceed with the migration procedure. If it is not changed and the minimum or maximum threads is out of the range, then AFP server will use default number of threads.

Migration Procedure

1 Migrating Server Configuration information:

Manual: Edit the `/etc/opt/novell/afptcpd/afptcpd.conf` in the source server and add support for DHX2 authentication and subtree search in the `AUTH_UAM` tag. After modifying the `afptcpd.conf` file, copy it from the source server to the target.

iManager: Using the iManager plug-in, enable support for DHX2 authentication and subtree search. For details, see "Administering the AFP Server"in the *OES 2018 SP3: OES AFP for Linux Administration Guide*.

2 Migrating Volume Alias information:

Copy the volume file `/etc/opt/novell/afptcpd/afpvols.conf`, from the source server to the target server.

3 Migrating Context information:

Copy the context file `/etc/opt/novell/afptcpd/afpdircxt.conf` from the source server to the target server.

4 Restart the AFP service for the configuration changes to take effect.

5 On successful migration, proceed to perform service specific proxy migration. For more information, see Chapter 30, "Migrating Proxy users to OES 2018 SP3," on page 245.

Verifying Migration

Verify that the migration process is complete by checking for the following details:

- NMAS methods for AFP are installed and synched to the tree. For details, see "Verifying LSM Installation" in the *OES 2018 SP3: OES AFP for Linux Administration Guide*.
- Login to the AFP server and attempt accessing the data.

19 Migrating CIFS to OES 2018 SP3

Migration refers to the process of migrating CIFS to target server.

- "Migrating CIFS from Netware to OES 2018 SP3" on page 161
- "Migrating CIFS to OES 2018 SP3" on page 170

Migrating CIFS from Netware to OES 2018 SP3

The NetWare to Open Enterprises Server (OES) CIFS migration process can be either initiated from the Migration Tool or through a command line utility. For detailed information on migration through the Migration Tool, see Chapter 1, "Overview of the Migration Tools," on page 15 and for information on the command line utility, see "Man Page for Migration" on page 167.

- "Migration Prerequisites" on page 161
- "Migration Scenarios" on page 161
- "Migration Procedure" on page 162
- "Post-Migration Procedure" on page 166
- "Verifying the Migration" on page 166
- "Man Page for Migration" on page 167

Migration Prerequisites

For the migration to happen successfully ensure the following requirements are met:

- The CIFS server is installed and configured on the source server in one of the following platforms:
  - NetWare 6.5 SP8
- The CIFS server is installed and configured on the target server (OES 2018 SP3). For details, see "Installing and Setting Up CIFS" in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.
- NSS file system migration from the source to the target server is completed.

Migration Scenarios

The CIFS migration scenarios are explained in this section:

- "Migrate - Same Tree" on page 162
- "Migrate - Different Tree" on page 162
- "Transfer ID - Same Tree" on page 162
- "What is Migrated" on page 162

Migrate - Same Tree

Only CIFS shares and contexts of the source servers are consolidated. The remaining server configuration information is not consolidated. The target server configuration is overwritten with the source server configuration. For details on consolidation migration, see “Migration Scenarios” on page 16.

Migrate - Different Tree

CIFS consolidation for a Different Tree is not supported. However, it can be achieved by using the following procedure:

1. Migrate the file system by using the Different Tree scenario. For details, see “Migrating Data to a Server in a Different Tree” on page 117.
2. Re-configure CIFS on the target server. For details on configuring CIFS, see “Setting the CIFS Server and Authentication Properties” in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.

Transfer ID - Same Tree

In this scenario, the target is installed into the same tree with a temporary name and IP address. At the end of the procedure, the source server name and IP address are swapped for the target server name and IP address. For details on Transfer ID migration, see Part IV, “Transfer ID Migration,” on page 59.

What is Migrated

The following table gives you a quick overview of what is migrated from NetWare CIFS to OES 2018 SP3 CIFS for the different scenarios:

Table 19-1 *Migration Support for CIFS service*

Service supported	Consolidation		Transfer ID	
	Same Tree	Different Tree	Same Tree	Different Tree
Migrating CIFS shares	Yes	No	Yes	No
Migrating CIFS contexts	Yes	No	Yes	No
Migrating server configuration information	No	No	Yes	No

Migration Procedure

Follow the instructions in either of these sections to perform the CIFS migration:

- “Using the Migration Tool” on page 163
- “Using the Command Line” on page 164

Using the Migration Tool

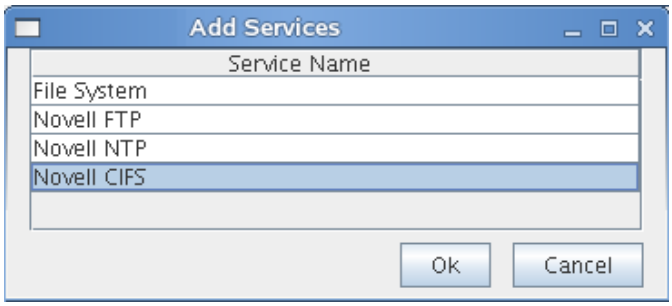
1 Launch the Migration Tool on the target server in one of the following ways:

Desktop: Click **Applications > Other > Novell Migration Tools**.

Terminal: Log in as the `root` user and at a terminal prompt, enter `miggui`

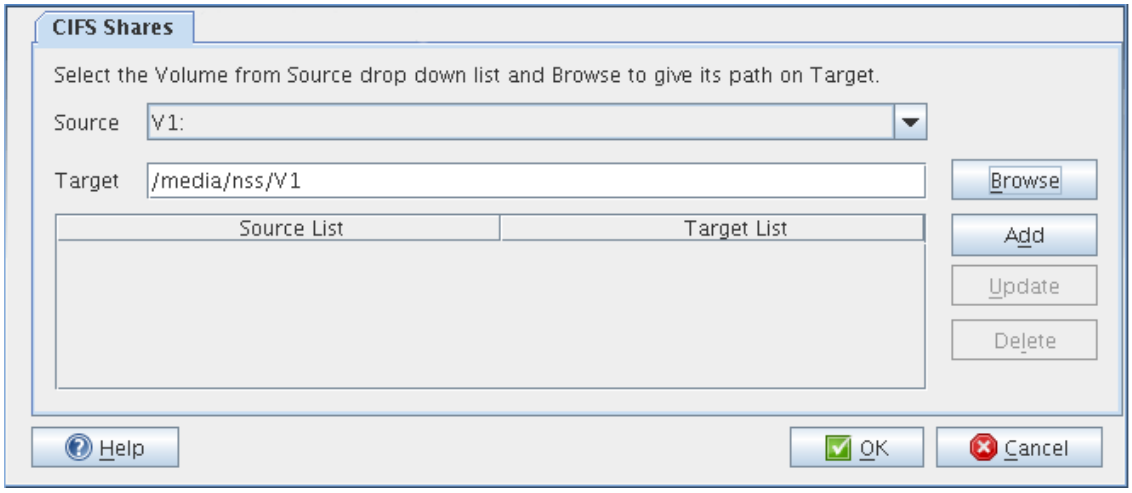
For details on configuring source and target Server information, selecting a migration type, opening a project, and all the tool buttons, see Chapter 2, “Overview of the Migration GUI,” on page 21.

2 Click **Add**, select **Novell CIFS** to migrate, and click **OK**.



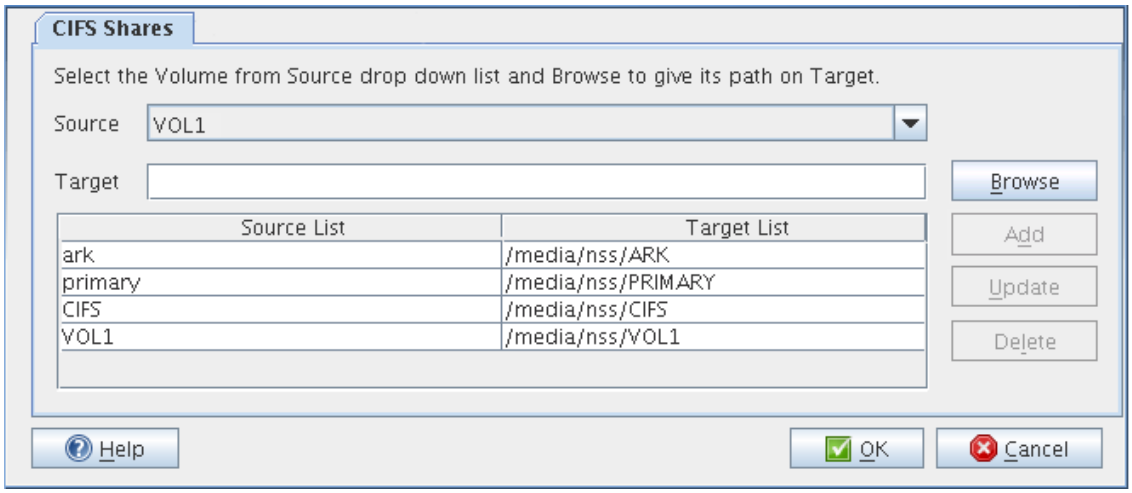
The **Status** is displayed as **Not Configured**.

3 Select **Novell CIFS** and click **Configure** to configure the migration parameters.



4 Under **CIFS Shares**, select the **Source** and **Target** shares for migration. Use **Browse** to browse for target shares. Use **Add** to add more source and target share mappings. Use **Update** to modify the configuration. Use **Delete** to remove the share mappings.

When you have filled in the information, the dialog will be similar to the following:



IMPORTANT: The Migration Tool does not support migration of CIFS shares on a cluster resource. After the file system migration, you will need to manually configure the CIFS shares on the target Linux system. For more information, see "Managing CIFS Shares " in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.

5 Click **OK** to complete the configuration.

The **Status** is displayed as **Ready**.

6 Click **Migrate** to start the migration process. When you are prompted to save the project, click **Yes.**

7 In the next dialog box, click **Yes** to proceed with the migration.

Wait for the migration to be completed. The **Status** changes to **Migrated**. The message **CIFS Migration Successfully Completed** is displayed.

NOTE: Use the **Status** > Service Information to verify for errors during migration. If there are errors, fix them and restart the migration procedure.

Using the Command Line

CIFS migration requires the complete source and target server details. Run the `migCifs` utility on the target server for migrating. An example `migCifs` command is shown below. For details on the command, see Table 19-2 and see "migCifs" in "Man Page for Migration" on page 167.

```
migCifs -s <sourceIPaddr> -p <sourceportnum> -a <sourceFDN> -w <passwd> -f
<sec/nonsecConn> -d <targetIPaddr> -q <targetportnumber> -b <targetFDN> -x
<passwd> -g <secure/nonsecureconn> -S <MigrationType> [-m
<cifssharemappings>]
```

```
migCifs -s <sourceIPaddr> -p <sourceportnum> -a <sourceFDN> -w <passwd> -f
<sec/nonsecConn> -d <targetIPaddr> -q <targetportnumber> -b <targetFDN> -x
<passwd> -g <secure/nonsecureconn> -S <MigrationType> -c
```

```
migCifs -s <sourceIPaddr> -p <sourceportnum> -a <sourceFDN> -w <passwd> -f
<sec/nonsecConn> -d <targetIPaddr> -q <targetportnumber> -b <targetFDN> -x
<passwd> -g <secure/nonsecureconn> -S <MigrationType> [-m
<sourcecifsshares>] -r
```

Table 19-2 *migCifs Command Details*

Command Option	Description
-s <sourceIPaddr>	Source server IP address. For example, -s 192.168.0.1.
-p <sourceportnum>	Port number of the source server. For example, -p 636.
-a <sourceFDN>	Source server FDN. For example, -a cn=admin,o=novell.
-w <passwd>	Password for the source server FDN. For example, -w mysrc.
-f <sec/nonsecConn>	Secure (SSL) or non-secure (Non-SSL) connection type of the source server. 1 for SSL and 0 for Non-SSL. SSL is preferred. For example, -f 1 or -f 0.
-d <targetIPaddr>	Target server IP address. For example, -d 192.168.0.2.
-q <targetportnum>	Port number of the target server. For example, -q 636.
-b <targetFDN>	Target server FDN. For example, -b cn=admin,o=novell.
-x <passwd>	Password for the target server FDN. For example, -x mytgt.
-g <sec/nonsecConn>	Secure (SSL) or non-secure (Non-SSL) connection type of the target server. 1 for SSL and 0 for Non-SSL. SSL is preferred. For example, -g 1 or -g 0.
-S <MigrationType>	Sets the Migration Type. 0 for Server to Server - Same Tree or Different Tree, 3 for Transfer ID, and 5 for Consolidation. For example, -S 0 or -S 3 or -S 5.
-m <mapfilename>	CIFS source to the target share mapping file. This is an optional command. Create the file using any text editor. Separate individual sharemaps by a line. 1. Open a new file in the text editor. 2. Specify sourcesharename#targetsharepath. For example, share1#CIFSV1:linuxshare1 share2#NSSvol:linuxshare2/cifsshare 3. Specify the required number of share details and save the file.
-c	Does not migrate CIFS Shares and Server Configuration information from the source. Migrates only the CIFS Context information.

Command Option	Description
-r	Removes the shares related to NetWare server from the target server after a Transfer ID migration. If -r is passed, migCifs considers it as repair mode and retries the server configuration migration. If -r is not passed, then migCifs considers it as migration. Pass the source only CIFS share file. The source shares are listed and each share terminated with a #. For example, /media/nss/CIFSV1:#. Do not pass the CIFS Password Policies files with this option.

Post-Migration Procedure

- "Restarting the CIFS Service" on page 166
- "Enabling "Share volumes by default" Option" on page 166

Restarting the CIFS Service

1 Run the following command to restart the service:

```
systemctl restart novell-cifs.service
```

Enabling "Share volumes by default" Option

After migration of CIFS service to OES 2018 SP3, default shares will not be mounted by CIFS.

1 View the list of all available share points using the command `novcifs -sl`.

2 Check the status of "Share volumes by default" attribute using the command `novcifs --list-servers`.

3 Enable the "Share volumes by default" attribute using the command `novcifs --share-vols-default=<netbios name of the physical or virtual server> --value=yes`.

For example, `novcifs --share-vols-default=BLR8-192.168_W --value=yes`.

Verifying the Migration

After migration is complete, the CIFS server on the target server must be available and running as it used to be on your NetWare server. This verifies that the migration has been successfully completed.

If the CIFS server is not running after migration, see "Migration" in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.

After a successful migration:

- All the CIFS shares are migrated and listed on the target server.
- All the CIFS contexts are migrated to the target server.

You can verify these steps for a successful migration by using either iManager or command line options.

- "Using iManager to Verify the Migration" on page 167
- "Using CLI to Verify the Migration" on page 167

Using iManager to Verify the Migration

1. Open iManager on the target server.
2. Go to **File Protocols** > **CIFS**.
3. Browse or specify the OES server.
4. Click **OK**.
5. Click **Start**. This displays the CIFS status as **Running**.
6. Click **Shares**. You must be able to list the sharepoints that were running on your NetWare and now migrated to OES 2018 SP3 server.

   For details on CIFS administration through iManager, see "Using iManager to Manage CIFS".

Using CLI to Verify the Migration

1. On the target server console, enter the command `systemctl status novell-cifs.service`.
2. If the status is not `running`, enter the command `systemctl start novell-cifs.service` to start the server.
3. If the status is `running`, enter the command `systemctl restart novell-cifs.service` to restart the server.
4. Enter the command `novcifs [-sl | --share --list]` or `novcifs [-sln sharename | --share --list --name=sharename]`

   This displays the list of sharepoints that were available on NetWare and are now migrated to the OES 2018 SP3 server.

   For details on CIFS administration through command line utilities, see "Using the Command Line to Manage CIFS" in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.

Man Page for Migration

To access this man page with the command information, enter `man migCifs` at the command prompt.

- "migCifs(8)" on page 167

migCifs(8)

A command line utility that communicates with the source and target servers for migrating CIFS configuration information from NetWare to OES 2018 SP3. The command must be run on a target server.

Syntax

Migrating the CIFS Service from NetWare to OES 2018 SP3

```
migCifs -s <sourceIP> -p <portnumber> -a <sourceFDN> -w <password> -f <sec/
nonsecConnType> -d <targetIP> -q <portnumber> -b <targetFDN> -x <password>
-g <sec/nonsecConnType> -S <MigType> [-m <mapfilename>]-t <source_treename>
```

Synchronizing after Consolidation

```
migCifs -s <sourceIP> -p <portnumber> -a <sourceFDN> -w <password>
-f <sec/nonsecConnType> -d <targetIP> -q <portnumber> -b <targetFDN>
-x <password> -g <sec/nonsecConnType> -S <MigType> -c
```

Repair after Transfer ID

```
migCifs -s <sourceIP> -p <portnumber> -a <sourceFDN> -w <password>
-f <sec/nonsecConnType> -d <targetIP> -q <portnumber> -b <targetFDN>
-x <password> -g <sec/nonsecConnType> -S <MigType> [-m
<sourcesharefilename>] -r
```

Options

Usage Options:

-s <sourceIP>

IP address of the source server.

-p <portnumber>

Port number of the source LDAP server.

-a <sourceFDN>

Fully Distinguished Name (FDN) of the source server tree administrator.

-w <password>

Password of the source server tree administrator.

-f <sec/nonsecConnType>

Enables or disables SSL connection for the source LDAP server. Set 1 for SSL and 0 for non-SSL connection.

-d <targetIP>

IP address of the target server.

-q <portnumber>

Port number of the target LDAP server.

-b <targetFDN>

Fully Distinguished Name (FDN) of the target server tree administrator.

-x <password>

Password of the target server tree administrator.

-g <sec/nonsecConnType>

Enables or disables SSL connection for the target LDAP server. Set 1 for SSL and 0 for non-SSL connection.

-S <MigType>

Sets the Migration Type. 0 for Server to Server - Same Tree or Different Tree, 3 for Transfer ID, and 5 for Consolidation. For example, -S 0 or -S 3 or -S 5.

-m <mapfilename>

Full path of the file that contains source and target server share mappings.

-t <source_treename>

Tree name of the source.

-c

Does not migrate CIFS Shares and Server Configuration information from the source. Migrates only the CIFS Context information.

-r

Removes the shares related to NetWare server from the target server after a Transfer ID migration. If -r is passed, migCifs considers it as repair mode and retries the server configuration migration. If -r is not passed, then migCifs considers it as migration.

Help Options

-h | --help

Displays the help information of the command and syntax.

-u | --usage

Displays the usage information of the command.

Files

`/etc/opt/novell/cifs/cifs.conf`

CIFS configuration file.

`/etc/opt/novell/cifs/cifsctxs.conf`

CIFS context file.

`/etc/opt/novell/cifs/.cifspwdfile`

Encrypted CIFS proxy user file.

`/var/opt/novell/log/cifs.log`

CIFS server log file.

`/var/opt/novell/migration/Newproj[n]/log/cifs.log`

CIFS migration log file.

Example

migCifs -s 192.168.0.1 -p 636 -a cn=admin,o=novell -w novell -f 1 -d 192.168.0.2 -q 636 -b cn=admin,o=novell -x novell -g 1 -S 0 -m /cifsShares.tmp -t novelltree

Authors

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See Also

novcifs(8)

Report Bugs

To report problems with this software or its documentation, visit http://bugzilla.novell.com.

Migrating CIFS to OES 2018 SP3

This section describes how to migrate CIFS from a supported OES server to OES 2018 SP3.

Before you proceed with the migration, review "Prerequisites" on page 170. In this section, the source server refers to supported OES versions and the target server refers to an OES 2018 SP3 server.

- "What is Migrated" on page 170
- "Prerequisites" on page 170
- "Migration Procedure" on page 171
- "Post Transfer ID Migration Procedure" on page 172
- "Verifying Migration" on page 172

What is Migrated

- Server configuration information
- Shares
- Contexts

Prerequisites

- OES server is already installed and CIFS is configured. For details, see *OES 2018 SP3: OES CIFS for Linux Administration Guide*.
- NSS Pools and volumes are already migrated to the new OES 2018 SP3 server from a supported source OES server. Use the cluster migrate `resource_name node_name` command to migrate the cluster pools and volumes. For details, see "Using the Cluster Migrate Command" in the *OES 2018 SP3: OES Cluster Services for Linux Administration Guide*.
- Non-cluster NSS volumes are already migrated to the new OES 2018 SP3 server from a supported OES server. This can be done by unmounting the corresponding file system from the source machine and mounting it on the target machine.

Migration Procedure

1 Migrating Server Configuration information:

In case of ID Swap, on the target server using iManager replicate the following server properties:

- Name
- Comment
- Domain/Workgroup
- Support for Oplocks
- Support for DFS

2 Migrating Share information:

During the migration process, all shares except the shares that have been manually added are migrated. To replicate the shares that are manually added, use the CIFS iManager plug-in. For details, see"Managing CIFS Shares " in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.

3 Migrating Context information:

Manual: Copy the context file `/etc/opt/novell/cifs/cifsctxs.conf` from the source server to the target server.

iManager: Using CIFS iManager plug-in, replicate the CIFS user's context. For details, see "Configuring a CIFS User Context"in the *OES 2018 SP3: OES CIFS for Linux Administration Guide*.

NOTE: After completing the migrate, ensure that you reconfigure CIFS service using yast2 novell-cifs or use the iManager Add Context task to add the contexts to the cifsctxs.conf file, before you enable subtree search feature.

---

4 Copying CIFS configuration file:

Copy the CIFS configuration file `/etc/opt/novell/cifs/cifs.conf` from the source to the target server.

CIFS configuration settings are stored in eDirectory and configuration files. During Transfer ID migration, the settings in eDirectory are migrated automatically, whereas the settings stored in the configuration files are not. To migrate them manually, copy the `cifs.conf` file to the target server.

5 If the source server is OES 2015 SP1 or older version, add the following parameters manually in the `/etc/opt/novell/cifs/cifs.conf` file on the target server.

5a `-OCS yes`

5b `-LOG_LEVEL` with the required option. The available log level options are: debug, info, and error. For example, to configure `debug` as the log level, add the parameter `-LOG_LEVEL debug`

6 Restart the CIFS server using the `systemctl restart novell-cifs.service` command.

7 Proceed to perform proxy migration. For services using the common proxy, see "Services that are Using Common Proxy" on page 246.

Post Transfer ID Migration Procedure

- "OES 2 SP3, OES 11 or OES 2015 to OES 2018 SP3" on page 172

OES 2 SP3, OES 11 or OES 2015 to OES 2018 SP3

After performing the migration steps in "Transfer ID Migration Procedure" on page 245, perform the following tasks:

- "Restarting the CIFS service" on page 172
- "Re-enabling Pass-through Information Levels Capability" on page 172
- "Enabling "Share volumes by default" Option" on page 172

Restarting the CIFS service

1 Run the following command to restart the service:

```
systemctl restart novell-cifs.service
```

Re-enabling Pass-through Information Levels Capability

1 If you have enabled pass-through information levels capability on the target server, copying the `cifs.conf` file might overwrite the settings. Re-enable it on the target server after the migration is complete by running the `novcifs -info-level-passthru=yes` command.

Enabling "Share volumes by default" Option

After migration of CIFS service to OES 2018 SP3, default shares will not be mounted by CIFS.

1 View the list of all available share points using the command `novcifs -sl`.

2 Check the status of "Share volumes by default" attribute using the command `novcifs --list-servers`.

3 Enable the "Share volumes by default" attribute using the command `novcifs --share-vols-default=<netbios name of the physical or virtual server> --value=yes`.

For example, `novcifs --share-vols-default=BLR8-192.168_W --value=yes`.

Verifying Migration

After you have migrated the CIFS services to the OES 2018 SP3 target, verify that the migration process is complete by checking for the following details:

- Verify that the NMAS methods for CIFS are installed and synchronized to the tree. For details, see "Verifying LSM Installation" in the OES 2018 SP3: OES CIFS for Linux Administration Guide.
- Log in to the CIFS server and attempt to access the data.

20 Migrating DHCP to OES 2018 SP3

Migration refers to the process of migrating the DHCP Services running on NetWare or Open Enterprise Server (OES) to OES 2018 SP3.

For general information about the Migration Tool, see the Chapter 1, “Overview of the Migration Tools,” on page 15.

- “Migrating DHCP from Netware to OES 2018 SP3” on page 173
- “Migrating DHCP to OES 2018 SP3” on page 184

Migrating DHCP from Netware to OES 2018 SP3

In these sections, the NetWare server is referred to as the source server and the OES 2018 SP3 server as the target server.

- “Migration Requirements” on page 173
- “Migrating DHCP” on page 174
- “Migration Scenarios” on page 181
- “Migrating a Cluster” on page 182
- “Post-Migration Procedures” on page 182
- “Verifying the Migration” on page 183

Migration Requirements

Make sure your setup addresses the following requirements before you migrate DHCP to the new platform.

- ❒ An eDirectory integrated DHCP server installed and configured on the target machine. This takes care of the schema extension on the target server tree and creation of the dhcpLocator and DHCPGroup objects.
- ❒ The user running DHCP Migration requires read and write permissions on the target machine for the following folders:

  ```
  /opt/novell/migration/dhcpmigration/tmp
  /opt/novell/migration/dhcpmigration/dhcp
  ```

  Recommended: Run DHCP Migration as the `root` user.
- ❒ The target and source servers should have their time synchronized, or the leases might not function properly.
- ❒ Use the following source NetWare platforms for the migration process:
  - NetWare 6.5 SP8

Migrating DHCP

To migrate the DHCP Services, you can use the Migration Tool or the command line interface.

- "Understanding the Migration Process" on page 174
- "Using the Migration Tool to Migrate Servers" on page 175
- "Using the Command Line to Migrate Servers" on page 180

Understanding the Migration Process

Make sure that you install the OES 2018 SP3 server as the target server for the DHCP Services. For more information on installing DHCP Services, refer to "Installing and Configuring DHCP " in the *OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide*.

During migration, the NetWare DHCP configuration objects are read and mapped to the corresponding configuration objects on Linux DHCP. This helps in retaining the same functionality after the migration process.

- **Subnets:** All the subnets associated with the NetWare DHCP server are migrated to the new platform. If there is at least one address range associated with the NetWare DHCP server inside the subnet, the subnet is migrated with all the associated address ranges. The subnet object is created inside the dhcpService object on Linux. After migration, the subnet is identified by its IP address.
- **DHCP Server:** You can specify the name of the DHCP server in the **Server Name** field under the **Target Options** tab.
- **DHCP Service:** During a server-level or tree-level migration, a dhcpService object is created on the target server corresponding to each source NetWare DHCP server. This is the container object that contains all the DHCP configuration data associated with DHCP server. The dhcpService object is created inside the context specified in the **Service Context** field during migration. The dhcpService object name can be specified in the **Service Name** field under **Target Options** tab.

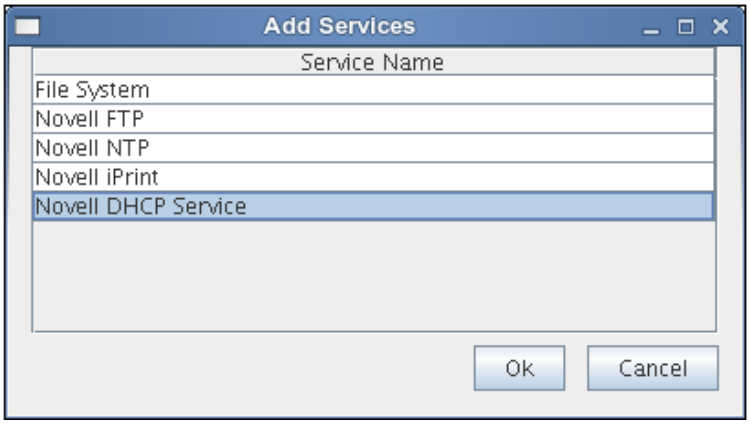
  For a subnet-level Migration, the subnets are created inside an existing dhcpService object on target server. Specify the existing dhcpService object in the **Service Context** field.
- **Address Range:** After the migration process, all the address range objects are mapped to pool objects on Linux.
- **Zone:** After the migration, all the zone objects retain the same name as they had on the NetWare platform. Zone objects are also created inside the dhcpService object.
- **Subnet Pool:** On the Linux platform, subnet pools on NetWare are mapped to the Shared Network objects.
- **IP Address (manual):** All manually defined IP addresses are migrated as hosts inside the subnet object. The hosts are identified by their IP addresses. For example, if the address of an IP address object on NetWare is 1.1.1.1, on Linux it is identified as 1_1_1_1.
- **IP Address (dynamic):** Information on all the dynamically leased IP addresses is maintained at the `/var/lib/dhcp/db` location. This lease file contains details for every IP address leased.
- **Comments:** Any comments that exist on the NetWare platform are not migrated to the Linux platform.

- ❒ **Excluded Hardware Addresses:** Excluded hardware addresses on NetWare after migration are mapped to `class-excluded_hosts` on Linux.
- ❒ **Included Hardware Addresses:** Included hardware addresses on NetWare after migration are mapped to `class-included_hosts` on Linux.

NOTE: If the name of any object contains a space, the space is replace by an underscore "_" during migration.

Using the Migration Tool to Migrate Servers

1. Open the Migration Tool GUI using the "Launch the Migration Tool Utility" on page 45.
2. Follow the Migration Process to start the process.
3. Click **Add** in the **Services to Migrate** panel, then select the **Novell DHCP Service**.



4. Click **OK**, then click **Configure**. The DHCP configuration window displays.
5. DHCP provides migration at the following three levels:
   - "Server Level" on page 177
   - "Subnet Level" on page 179
   - "Tree Level" on page 180

Configuring DHCP Options

The DHCP configuration window consists of three tabs:

- Source Options
- Target Options
- Reverse Zone Selection

Source Options

This tab lets you choose the level of migration that you want to use.

- Server Level

- Subnet Level
- Tree Level

Target Options

This tab lets you choose the DHCP options for each level of migration. The following table lists the fields in the target options tab:

Table 20-1 *DHCP Configuration fields*

Field	Description
Server Context	Context of the target DHCP server object.
Server Name	Name of the target DHCP server object.
Service Context	Context of the target DHCP service object.
Service Name	Name of the target DHCP service object.
Locator Object	Distinguished name of the dhcpLocator object in the target tree.
Group Object	Distinguished name of the DHCPGroup object in the target tree.
Lease file location	Lease file name with absolute file path where the NetWare DHCP dynamic leases are migrated.

Reverse Zone Selection

Reverse zones are used for reverse lookups. It finds the DNS name associated with the IP address. Use this tab to select the available reverse zones on the source to be migrated to the target.

NOTE: The forward zones associated with a subnet in a DDNS setup are automatically migrated. The forward zones are not required to be selected exclusively in this scenario.

The following table lists the fields in the DHCP configuration window:

Table 20-2 *DHCP Configuration fields*

Field	Description
Server DN	The distinguished name of the DHCP server to be migrated.
Subnet DN	The distinguished name of the subnet to be migrated.
Base DN	The distinguished name of the container on the target tree where the configuration is to be migrated. **NOTE:** For tree-level and server-level migration, Base DN is a container such as Organization, Organization Unit, or Domain. For subnet-level migration, Base DN is a DHCP Service object only. When you browse for the Base DN, it appropriately displays all the available service objects.

Field	Description
Locator DN	The distinguished name of the dhcpLocator object in the target tree. **NOTE:** Not applicable for a subnet-level migration.
Group DN	The distinguished name of the DHCPGroup object in the Target tree. **NOTE:** Not applicable for a subnet-level migration.
Lease file	The path and filename for the leases to be migrated. All the dynamic IP addresses on NetWare are mapped to a lease file entry in this file. **NOTE:** Not applicable for tree-level and server-level migration.

Migration Methods

You can choose to migrate DHCP services by any one of the following three methods:

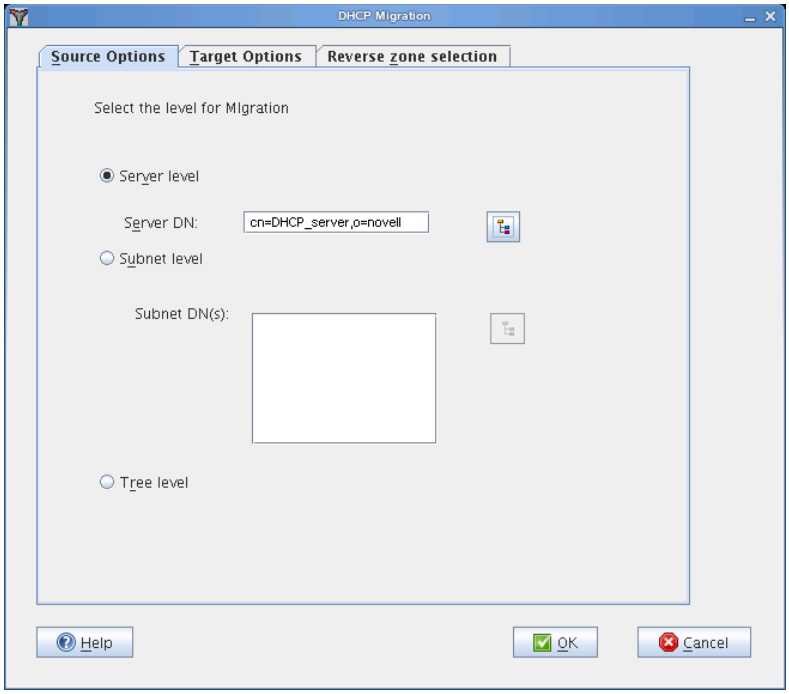
- Server Level
- Subnet Level
- Tree Level

Server Level

In the Server Level migration, the selected NetWare DHCP server is migrated to the OES 2018 SP3 server. You can choose to migrate only one server at a time.

NOTE: Refer to Table 20-2 on page 176 for DHCP configuration field descriptions.

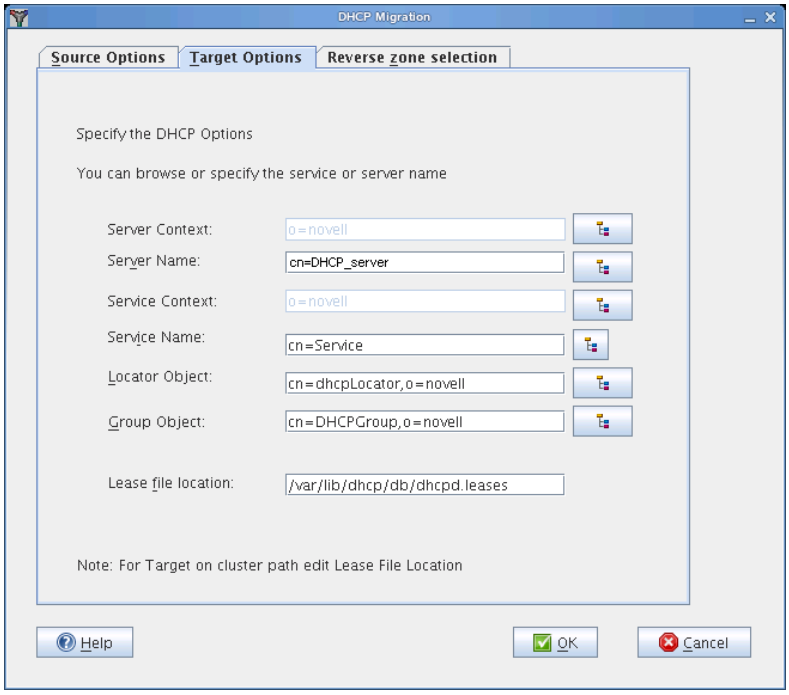
1 In the **Source Options** tab of DHCP migration window, select the **Server level** option.



2 Click **Browse** to select the **Server DN**.

Server DN: The Server DN is the distinguished name of the server to be migrated.You can browse to the Source tree (only containers and server objects are displayed) to locate the server to be migrated. Select the server object and click **OK**. If the selected object is not a DHCP server, then a warning is displayed.

3 In the **Target Options** tab, click **Browse** to select the **Server Context**.



4 Click **Browse** to select the existing **Server Name** or add the new server name that you want to migrate. For more information on adding a new server, refer to "Server Management" in the *OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide*.

5 Click **Browse** to select the **Service Context**.

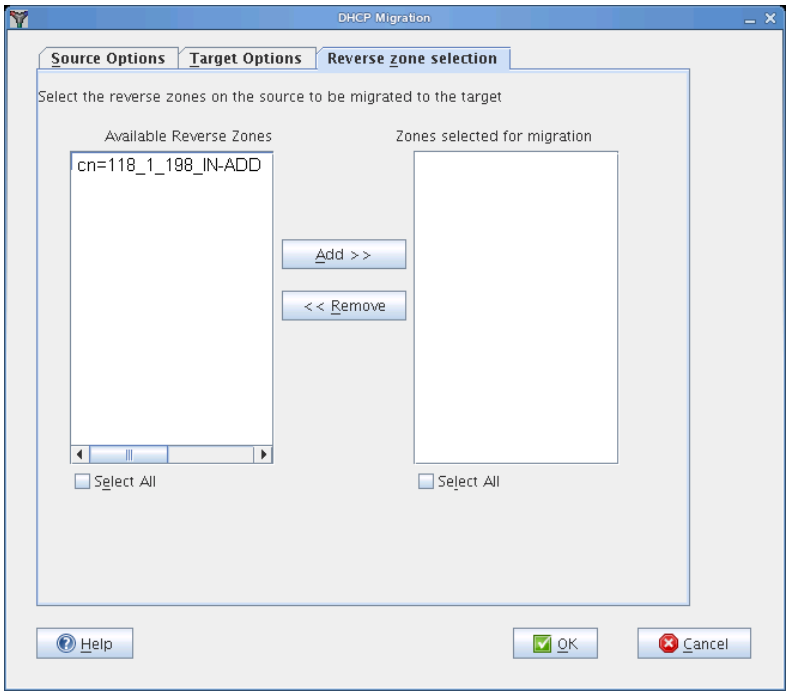
6 Click Browse to select the existing **Service Name** or add the new service name that you want to migrate.

7 Click **Browse** to select the **Locator Object**.

8 Click **Browse** to select the **Group Object**.

9 Specify the **Lease file location**.

10 In the **Reverse Zone Selection** tab, select the reverse zones in **Available Reverse Zones**. Click **Add** to add all the selected zones. Use the Ctrl key to select multiple zones.



11 Click OK to complete the configuration.

Subnet Level

In the Subnet Level migration, the selected subnets associated with the NetWare DHCP server are migrated to the OES 2018 SP3 server. The subnet objects are created inside the dhcpService object on the Linux server. After migration, the subnet is identified by its IP address. You can choose to migrate multiple subnets at a time.

NOTE: Refer to Table 20-2 on page 176 for DHCP configuration field descriptions.

---

1 In the **Source Options** tab of the DHCP migration window, select the **Subnet Level** option.

2 Click Browse to select the **Subnet DN(s)**. Use the Ctrl key to select multiple subnets.

Subnet DN(s): The Subnet DN is the distinguished name of the subnets to be migrated.

You can browse to select one or more subnets. The selected subnets are displayed in the list box. If an incorrect container is selected, then a warning is displayed.

3 In the **Target Options** tab, click **Browse** to select the **Service Context**.

4 Click **Browse** to select the existing **Service Name** that you want to migrate.

The **Server Context**, **Server Name**, **Locator Object**, and **Group Object** options are not applicable for subnet level migration.

5 Specify the **Lease file location**.

6 In the **Reverse Zone Selection** tab, select the reverse zones in **Available Reverse Zones**. Click **Add** to add all the selected zones. Use the Ctrl key to select multiple zones.

7 Click **OK** to complete the configuration.

Tree Level

In the Tree Level migration, all the NetWare DHCP servers in the tree are migrated to the OES 2018 SP3 server.

NOTE: Refer to Table 20-2 on page 176 for DHCP configuration field descriptions.

1. In the **Source Options** tab of the DHCP migration window, select the **Tree Level** option.
2. In the **Target Options** tab, click **Browse** to select the **Server Context**.
3. Click **Browse** to select the **Service Context**.

   The **Server Name** and **Service Name** options are displayed by default, but they are disabled.
4. Click **Browse** to select the **Locator Object**.
5. Click **Browse** to select the **Group Object**.
6. Specify the **Lease file location**.
7. Click **OK** to complete the configuration.

Using the Command Line to Migrate Servers

1. To run the DHCP migration utility through the command line, run `/opt/novell/migration/bin/migdhcp` with the following parameters:

Option	Description
-h	Print this summary.
-k	Level of migration (subnet|tree|server).
-i	Verbose mode - on or off.
-d	Debug mode - on or off.
-s	IP address of the source LDAP server.
-p	Port number of the source LDAP server.
-a	DN of the admin user in the source tree.
-t	IP address of the target LDAP server.
-q	Port number for the target LDAP server.
-b	DN of the admin user in the destination tree.
-l	DN of the dhcpLocator object in the destination tree (Required only for server-level or tree-level migration).
-g	DN of the DHCPGroup object in the destination tree (Required only for server-level or tree-level migration).
-e	DN of the server to be migrated (Required only for server-level migration).
-n	Base DN for server on the destination tree.
-m	Base DN for service on the destination tree.

Option	Description
-r	1 for source SSL bind, 0 for source non-SSL bind.
-u	1 for destination SSL bind, 0 for destination non-SSL bind.
-f	Absolute path of the file containing the DNs of the subnets that you want to migrate. (Required only for subnet-level migration). Enter the subnet DNs in the following format: cn=subnet1,o=novell cn=subnet2,ou=novel1,o=novell cn=subnet3,ou=novell2,o=novell
-c	Absolute path of the file where you want to store the lease file information
-E	DHCP server object name on the Target server (Required only for server-level migration).
-S	DHCP service object name on Target server (Required only for server-level migration).
-z	Full path of the file containing the Reverse Zone DNs.

Examples for Command Line Migration

Tree Level: `/opt/novell/migration/bin/migdhcp.sh -k tree -i on -d on -s 192.168.13.1 -p 636 -a cn=admin,o=novell -t 182.155.13.8 -q 636 -b cn=admin,o=novell -l cn=dhcpLocator,o=novell -g cn=DHCPGroup,o=novell -n o=novell -r 1 -u 1`

Server Level: `/opt/novell/migration/bin/migdhcp.sh -k server -i on -d on -s 192.168.13.1 -p 636 -a cn=admin,o=novell -t 182.155.13.8 -q 636 -b cn=admin,o=novell -l cn=dhcpLocator,o=novell -g cn=DHCPGroup,o=novell -e cn=DHCP_SERVER,o=novell -n o=novell -r 1 -u 1`

Subnet Level: `/opt/novell/migration/bin/migdhcp.sh -k subnet -i on -d on -s 192.168.13.1 -p 636 -a cn=admin,o=novell -t 182.155.13.8 -q 636 -b cn=admin,o=novell -n cn=DHCPService,o=novell -r 1 -u 1 -f /somelocation/filewithsubnetdns -c /somelocation/filename`

Migration Scenarios

DHCP migration supports two scenarios:

- “Transfer ID” on page 182
- “Consolidation” on page 182

For more information about these scenarios, see “Support Matrix for NetWare and OES Services” on page 18.

Transfer ID

In this scenario, the identity of the target server is swapped with the source server. The IP address and the machine name of the target server change to the source IP address and machine name. The target should be installed in the same tree as the source server. The target should be a non-replica server.

Based on the level of migration (subnet, server, or tree), the configuration objects are created for the Linux DHCP server on the target tree inside the dhcpService object created during migration.

Consolidation

In this scenario, the configuration data associated with the source server is associated to a single target server. DHCP Consolidation migration can be performed at the tree, server, or subnet-level.

Migrating a Cluster

There are two scenarios for migrating clusters:

- "NetWare and Linux Clusters Attached to the Same Tree" on page 182
- "NetWare and Linux Clusters Attached to Different Trees" on page 182

NetWare and Linux Clusters Attached to the Same Tree

Run the migration tool from one of the Linux nodes. Perform the tree-level migration with the source and target servers on the same tree.

This ensures that all NetWare DHCP configuration data is available for Linux DHCP.

In this scenario, both the NetWare server and the OES 2018 SP3 server are on the same eDirectory tree. The NetWare source server must be running NetWare 6.5 SP8. The Linux target server must be running SUSE Linux Enterprise Server (SLES) 12 SP5 with OES 2018 SP3 on 64-bit hardware.

NetWare and Linux Clusters Attached to Different Trees

Run the migration tool from one of the Linux nodes. Perform the tree-level migration with the source server (the tree to which NetWare clustered nodes are attached) on one tree and the target server (the tree to which the Linux clustered nodes are attached) on another tree.

This ensures that all NetWare DHCP configuration data is available for Linux DHCP.

In this scenario, the NetWare server and the OES 2018 SP3 server are on different eDirectory trees. The NetWare source server must be running NetWare 6.5 SP8. The Linux target server must be running SUSE Linux Enterprise Server (SLES) 12 SP5 with OES 2018 SP3 on 64-bit hardware.

Post-Migration Procedures

1. In the `/etc/dhcpd.conf` file, change `ldap-base-dn` to reflect the context of the migrated DHCP Server and change `ldap-dhcp-server-cn` to reflect the name of the migrated DHCP Server.
2. Check the lease file at the `/var/lib/dhcp/db/dhcpd.leases` folder.

3 To use DDNS after a subnet-level migration, add the following settings to the DHCP Server Object:

- ddns-rev-domainname in-addr.arpa
- ddns-update-style interim
- client-updates deny
- update-optimization false

NOTE: DDNS updates are required only when you migrate to an existing DHCP server.

4 Start the OES DHCP server by using the `rcnovell-dhcpd start` command.

5 Continue with "Cluster Migration from NetWare to Linux" on page 183 and "Running a Preexisting DHCP Server" on page 183 as necessary.

Cluster Migration from NetWare to Linux

On the node where you ran the migration:

1 Open the `<mountpath>/etc/dhcpd.conf` file.

The <mountpath> parameter indicates the target directory in the shared volume where DHCP-specific directories are created.

Inside the `/etc/dhcpd.conf` file, which is located in the shared volume, change the *ldap-dhcp-server-cn* attribute to the migrated server cn.

2 Copy the `migrated_server.leases` file from the **/var/lib.dhcp/bd** folder to the **<mountpath> var/lib/dhcp/db/** folder and rename it to `dhcpd.leases`.

Running a Preexisting DHCP Server

After migration, the DHCP server and service objects are created in the tree. You can run a preexisting DHCP server along with the migrated NetWare server's configuration.

1 Log in to the tree by using Java Management Console.

2 Click the DHCP (OES Linux) tab.

3 Select the service object that was created after migrating the NetWare server from the left pane in the Java Management console.

4 Associate this service object with the existing DHCP server.

Verifying the Migration

To verify the migration, use Java Console to go to the destination tree and locate the DHCP Server object and the corresponding DHCP Service object. All the DHCP server configuration is stored inside the corresponding DHCP Service object.

Verify that leases are present:

❒ For a tree-level, server-level, or subnet-level migration, the lease filename and location are provided by the user. Make sure the expected files are present in the specified location.

Migrating DHCP to OES 2018 SP3

In this section, the source server refers to a supported OES server and the target server refers to an OES 2018 SP3 server.

- "Planning Your Migration" on page 184
- "Migration Scenarios" on page 184
- "Post-Migration Procedure" on page 186
- "Verifying the Migration" on page 186

Planning Your Migration

Make sure your setup addresses the following requirements before you migrate DHCP to the new platform.

- "Requirements" on page 184

Requirements

- An eDirectory integrated DHCP server installed and configured on the target machine. This takes care of the schema extension on the target server tree and creation of the dhcpLocator and DHCPGroup objects.
- If the target server is in different subnet, ensure that you create a subnet in the target server before migration.

Migration Scenarios

To migrate DHCP to the new platform, you can use the Java Management Console. During migration, the configuration details as well as the data are migrated to the destination platform.

NOTE: To enable DHCP to autostart after a successful migration, execute the `chkconfig -a dhcpd` command on the source server.

- "Migrating Servers Within the Same eDirectory Tree" on page 184
- "Migrating Servers Across eDirectory Trees" on page 185

Migrating Servers Within the Same eDirectory Tree

1. Launch Java Console.
2. Select the service container object that you want to migrate to the target DHCP server.
3. From the Default DHCP Server list in the General Tab, select the DHCP server object of the target machine.
4. Click the **Save** button.
5. Migrate the DHCP leases from OES 2 SPx to OES 2018 SP3. To migrate the DHCP leases, copy the `/var/lib/dhcp/db/dhcpd.leases` file from the source OES 2 server to the corresponding location in the OES 2018 SP3 server.

6 Perform Transfer ID. For more information, see Part IV, “Transfer ID Migration,” on page 59.

7 On successful migration, proceed to perform service specific proxy migration. For more information, see “Migrating Proxy users to OES 2018 SP3” on page 245.

Migrating Servers Across eDirectory Trees

To migrate servers across eDirectory trees, you need to export the source server’s DHCP configuration and import the DHCP configuration to the target server.

The import and export operation is used to transfer the DHCP service configuration from files into eDirectory or from eDirectory to a text file in a `dhcpd.conf` format respectively. Only Linux DHCP configuration files should be used to import or export the DHCP configuration.

NOTE: Before importing a DHCP configuration file, check the syntax of the file with the `rcnovell-dhcpd check-syntax` command. The command reads `/etc/dhcpd.conf` and checks the syntax.

- “Exporting the DHCP Configuration” on page 185
- “Importing the DHCP Configuration” on page 185
- “Migrating DHCP Leases from OES 2 SP3, OES 11, OES 2015, or OES 2018 to OES 2018 SP3” on page 186

Exporting the DHCP Configuration

The file is exported in a `dhcpd.conf` format. These files can be imported anywhere and can also be imported back to eDirectory by using the DNS/DHCP Java-based Management Console Utility.

1 Click the **DHCP (OES Linux)** tab of the Java Management Console.

2 Click **Export DHCP Database** on the toolbar to open the **Export - DHCP** window.

3 Specify the name of a destination file or browse to select a filename from the dialog box, then click **Next**.

4 Select the services by using the Export DHCP - Service List window.

5 Click **Export** to store your information in a file.

6 Click **Finish** to complete the export.

If the export program encounters any error, the **Details** button is enabled in the error window. Click **Details** to view the error details.

Importing the DHCP Configuration

The configuration file to import should be in DHCP V3 format. Importing the Linux DHCP configuration file overwrites the associated DHCP server's settings.

To import the DHCP files:

1 Click the **DHCP (OES Linux)** tab of the Java Management Console.

2 Click **Import DHCP Database** on the toolbar.

3 Click **Browse** to select or specify the path for the DHCP database file.

4 Click **Next** to open the Import - File Input window.

5 Specify the service name in the **Service Name** text box.

6 In the Select NDS Context text box, browse to select or enter specify the context where the service is to be created.

7 (Optional) Select a **Default DHCP Server** from the drop-down list.

8 Click **Import**.

9 Click **Finish** to complete the import operation.

If the import program encounters any error, the **Details** button is enabled in the error window. Click **Details** to view the error details.

Migrating DHCP Leases from OES 2 SP3, OES 11, OES 2015, or OES 2018 to OES 2018 SP3

To migrate the DHCP leases from a supported OES server to OES 2018 SP3, copy the `/var/lib/dhcp/db/dhcpd.leases` file from the source OES 2 server to the corresponding location in the OES 2018 SP3 server.

Post-Migration Procedure

1 In the `/etc/dhcpd.conf` file, change ldap-base-dn to reflect the context of the migrated DHCP Server and change ldap-dhcp-server-cn to reflect the name of the migrated DHCP Server.

Verifying the Migration

1 Check the syntax of the dhcp configuration file with the rcnovell-dhcpd check-syntax command. The command reads `/etc/dhcpd.conf` and checks the syntax.

2 Start the target server dhcp server using the following command:

```
rcnovell-dhcpd start
```

3 Verify the `/var/log/dhcp-ldap-startup.log` file to check the dhcp configuration of the migrated server.

21 Migrating DNS to OES 2018 SP3

Migration refers to the process of migrating DNS services to OES 2018 SP3.

- "Migrating DNS from Netware to OES 2018 SP3" on page 187
- "Migrating DNS to OES 2018 SP3" on page 189

Migrating DNS from Netware to OES 2018 SP3

In these sections, the NetWare server is referred to as the source server and the OES 2018 SP3 server as the target server.

The following sections give you more information on the prerequisites and the procedure to migrate source servers based on different scenarios:

- "Planning Your Migration" on page 187
- "Migration Scenarios" on page 188
- "Migration Procedure" on page 188
- "Post-Migration Procedure" on page 189

Planning Your Migration

Make sure your setup addresses the following requirements before you migrate DNS to the new platform.

- "System Requirements" on page 187
- "Supported Platforms" on page 188

System Requirements

- ❒ An eDirectory integrated DNS server installed on the target machine.

  NOTE: In a Server ID Swap scenario, do not select **Create DNS Server** option at the install time. This avoids the creation of the DNS server for the temporary NCP server. So when migration is completed, the existing DNS server objects are considered.

- ❒ Schema extension is already done on the destination server tree and DNS-DHCP Group, and the RootServerInfo and DNS-DHCP Locator objects are created.
- ❒ The user running the migration process should have rights to update files on the target machine. This user should also be included in the DNS-DHCP group in eDirectory.

Supported Platforms

The following platforms are accepted as valid source platforms for the migration process:

- ❒ NetWare 6.5 SP8

Migration Scenarios

To migrate DNS to the new platform, you can use the Java Management Console. During migration, the configuration details as well as the data are migrated to the destination platform.

- "Migrating Servers within the Same eDirectory Tree" on page 188
- "Migrating Servers across eDirectory Trees" on page 188

Migrating Servers within the Same eDirectory Tree

In this scenario, both the NetWare server and the OES 2018 SP3 server are on the same eDirectory tree.

Migrating Servers across eDirectory Trees

In this scenario, the Netware server and the OES 2018 SP3 server are on different eDirectory trees, so the migration is across the trees.

Depending on your setup, you can choose to migrate a single server at a time or migrate all the servers at the same time.

Migration Procedure

- "Using Java Console to Migrate Servers within the Same eDirectory Tree" on page 188
- "Using Java Console to Migrate Servers across eDirectory Trees" on page 189

Using Java Console to Migrate Servers within the Same eDirectory Tree

1. Launch Java Console.
2. Identify the source NCP server and the corresponding DNS server object that should be migrated to target server.

   The server and the server object will no longer exist on the NetWare server after migration. Make sure that the DNS Service is not running on this source NCP server.

   To stop the service, see "Stopping the DNS Server" in the *OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide*.
3. Use Java Console to move the source DNS server. This task also migrates the primary zones in the tree.

   For information about moving the DNS server, see "Moving a DNS Server" in the *OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide*.

Using Java Console to Migrate Servers across eDirectory Trees

1. In Java Console, create the DNS server object. For details, see *OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide*.
2. On the target server, create a secondary zone and specify the zone master IP address as the IP address of the NetWare server where the primary zone exists. After the initial zone transfer, change the zone on the source NetWare server to secondary and make the zone on the target server to be the primary server.

   Migrate primary zones on the target server by creating a secondary zone and specifying the zone master IP address as the IP address of the NetWare/OES server where the primary zone exists.
3. Load the DNS servers on primary and secondary server to initiate zone transfer.
4. After the initial zone transfer, change the zone on the source NetWare server to secondary and make the zone on the target server to be the primary server zone.
5. To migrate secondary zones, create a secondary zone on the Linux server and specify it to be the secondary zone to the target primary zone that is on the target server. Ensure that both the primary and the secondary zones use the same name. This is essential for a successful zone transfer.

NOTE: This method of migration is limited to migrating the zone data only.

Post-Migration Procedure

1. Use the Java Management Console to check for the existence of the following objects:
   - DNS-DHCP
   - DNSDHCP-GROUP
   - RootServerInfo
   - DNS Server object
2. Load `novell-named` using the `rcnovell-named start` command and check to see if the `/etc/opt/novell/named/named.conf` file contains zone database files with valid information.
3. Use the nslookup utility to query for records in zones.

Migrating DNS to OES 2018 SP3

In these sections, the supported OES server is referred to as the source server and the OES 2018 SP3 server as the target server.

- “Planning Your Migration” on page 190
- “Migration Scenarios” on page 190
- “Post-Migration Procedure” on page 191

Planning Your Migration

Make sure your setup addresses the following requirements before you migrate DNS to the new platform.

System Requirements

- An eDirectory integrated DNS server installed on the target machine.

  NOTE: During DNS installation, do not select **Create DNS Server** option at the install time. This avoids the creation of the DNS server for the temporary NCP server. So when migration is completed, the existing DNS server objects are considered.

- Schema extension is already done on the destination server tree and DNS-DHCP Group, and the RootServerInfo and DNS-DHCP Locator objects are created.

Migration Scenarios

To migrate DNS to the new platform, you can use the Java Management Console. During migration, the configuration details as well as the data are migrated to the destination platform.

Migrating Servers within the Same eDirectory Tree

1. Launch Java Console.
2. Identify the source NCP server and the corresponding DNS server object that should be migrated to target server.

   The server and the server object will no longer exist on the OES 2 server after migration. Make sure that the DNS Service is not running on this source NCP server.

   To stop the service, see “Stopping the DNS Server” in the OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide.
3. Use Java Console to move the source DNS server. This task also migrates the primary zones in the tree.

   For information about moving the DNS server, see “Moving a DNS Server” in the OES 2018 SP3: DNS/DHCP Services for Linux Administration Guide.
4. On successful migration, proceed to perform service specific proxy migration, see “Migrating Proxy users to OES 2018 SP3” on page 245.

Using Java Console to Migrate Servers across eDirectory Trees

You can migrate DNS across eDirectory trees by exporting the DNS database from the source server and importing the database to the target server.

Exporting DNS Database

Export DNS database operation transfers the resource record data of a zone to a text file. The text file is in the DNS BIND master file format. These files can be used in other DNS servers, including BIND servers, or they can be imported back into the eDirectory database using the DNS/DHCP Java-based Management Console.

1. In the DNS Service window, select the zone you want to export and click **Export DNS Database** on the toolbar.
2. In the Export - DNS window, enter the name of a destination file or browse to select a filename from the dialog box.
3. Click **Export** to store your zone data in a file.
4. If the export program encounters any error, the Details button is enabled. Click **Details** to view the error details.

Importing DNS Database

Import DNS database operation transfers resource record data present in the BIND formatted DNS zone files into the eDirectory database.

1. In the DNS Service tab, click **Import DNS Database** on the toolbar.
2. Enter the DNS BIND formatted filename in the field provided. You can also browse to select the filename from the File Selection dialog box.
3. Click **Next** to select the context where the zone objects will be created.
4. Click **Next** to select the server name that manages the zone.

   You can select an existing DNS server or an NCP server, where DNS server object will be created. The selected DNS server must have the DNS/DHCP services installed in it.

   If you select the zone type as primary, this DNS server will act as a designated primary. If you select the zone type as secondary, this DNS server will act as a designated secondary.If you do not want to assign a DNS server for this zone leave this field empty.
5. Click **Next** to specify the zone type.

   If you select the zone type as primary, DNS servers act as primary servers for this zone or if you select secondary, servers act as secondary DNS servers.
6. Click **Next** to view the configuration that you selected.
7. Click **Import** to begin importing with this configuration.

   If the import program encounters any error, the Details button is enabled. Click **Details** to view the error details. Some resource records might not have been transferred because of incorrect data. Click **Create** on the tool bar to recreate these resource records.
8. Click **Finish** to complete the import operation.

Post-Migration Procedure

1. Use the Java Management Console to check for the existence of the following objects:
   - DNS-DHCP
   - DNSDHCP-GROUP

- RootServerInfo
- DNS Server object

2. Load `novell-named` using the `rcnovell-named start` command and check to see if the `/etc/opt/novell/named/named.conf` file contains zone database files with valid information.
3. Use the nslookup utility to query for records in zones.

22 Migrating DSfW to OES 2018 SP3

This section describes how to migrate DSfW to an OES 2018 SP3 environment.

NOTE: The migration procedure described in this section is applicable only for the migration of an OES server acting as a DSfW server.

Before you proceed with the migration, review "Planning Your Migration" on page 149.

- "Planning Your Migration" on page 193
- "Migration Procedure" on page 194
- "Post-Migration Procedure" on page 196

Planning Your Migration

Make sure your setup addresses the following requirements before you migrate DSfW.

- "Prerequisites" on page 193
- "What is Migrated" on page 193

Prerequisites

Before you proceed with the migration, review the details in "Prerequisites" on page 61. For a successful migration:

- The source server and the target server must be in the same eDirectory tree.
- Ensure that the time is synchronized between the source and the target server.
- The source and target servers must be in the same subnet and gateway.
- The target server must be a non-replica server in the eDirectory tree. To make the target server a non-replica server, select the **OES Pre-migration Server** option while installing OES 2018 SP3 on the target server.
- The target server DNS entry must point to DSfW source server IP address.
- Hostname of the target server should not be same as any other server in the DSfW tree.

What is Migrated

- DSfW configuration data present in eDirectory.
- Configuration files for DSfW services like kerberos, samba, xad, and rsync.
- Non DSfW services like iPrint and NSS. Non DSfW services need to be migrated as per the migration procedure for a particular service.

Migration Procedure

DSfW migration follows the Transfer ID migration process. For more information about Transfer ID, see Part IV, “Transfer ID Migration,” on page 59.

IMPORTANT: Ensure that you do not patch or register the migration server for updating before installing the **OES Pre-migration Server** pattern and the DSfW pattern.

Follow the instructions given below to perform the migration:

1 Install and configure eDirectory with pre-migration pattern on the target server.

NOTE: You must ensure that the target server is installed only with eDirectory and the OES pre-migration pattern. OES pre-migration and eDirectory pattern must be installed using Software Management tool provided by the YaST utility.

If services such as iPrint, NSS, and SMS are configured on the DSfW server that is migrated, then configuration data related to these services will also be migrated as part of the DSfW migration process. However, migration of service specific data needs to be migrated as per the migration procedure for a particular service. For information on migrating iPrint, see Chapter 25, “Migrating iPrint to OES 2018 SP3,” on page 205. For information on migrating NSS, see Chapter 16, “Migrating File Systems to OES 2018 SP3,” on page 101.

2 If the source server has proxy user configured for services such as LUM, see Chapter 30, “Migrating Proxy users to OES 2018 SP3,” on page 245.

3 Install the DSfW pattern on top of the preexisting patterns on the target server but do not configure it.

4 Reboot the target server.

5 Ensure that you have copied the SSH keys to avoid multiple password prompts:

5a Enable SSH on the source server and the target server.

5b Enter the `# ssh-keygen -t rsa` command on the target server.

5c When you are prompted to enter the file in which to save the key, press Enter.

The ssh keys are stored in the default location (`/root/.ssh/id_rsa`).

5d When you are prompted to enter the passphrase, leave it empty for no passphrase, then press Enter.

5e Copy the key value (the output of the `# ssh-keygen -t rsa` command) to the source server using the following command:

```
ssh-copy-id -i /root/.ssh/id_rsa.pub root@source-ip-address
```

```
Where -i /root/.ssh/id_rsa.pub is the output of # ssh-keygen -t rsa
command.
```

Replace <*source-ip-address*> with the IP address or the hostname of the source server.

6 Run the DSfW migration script on the target server. The purpose of this script is to migrate the DSfW-specific data to the target server.

```
./opt/novell/xad/sbin/migrate_dsfw.pl --source=source-ip --all
```

The migration script invokes the miggui tool.

The Transfer ID operation migrates eDirectory, LUM, and other associated services of the source server. For more information, see "Select the Source and Target Server and the Migration Type" on page 67.

7 Reboot the target server.

8 After you reboot the server, you are prompted to configure additional features like WINS and Sites. This can be done using the DSfW Feature Configuration Wizard.

IMPORTANT: You are prompted to configure these features only once. If you fail to configure these features during the first instance, you will not be able to configure these features later.

Enter the authentication details in the login dialog box, depending on the scenario in which you are provisioning, then click **OK.**

Provisioning Scenario	Authentication Details Required
Non-name-mapped, forest root domain	The current domain credentials.
Name-mapped, forest root domain	The current domain credentials and the tree admin credentials.
Non-name-mapped child	The current domain credentials, the parent domain credentials, and the tree/container admin credentials.
Name-mapped child	The current domain credentials, the parent domain credentials, and the tree/container admin credentials.
Additional Domain Controller	The current domain credentials and the tree admin credentials.

IMPORTANT: If you are installing a first-level child domain in a non-name-mapped scenario, the tree admin and the parent domain credentials are the same.

9 Select the feature that you want to configure, then click **Next**.

10 On the task list page, click **Run** to manually execute a task or click **Run All** to execute all the tasks sequentially without any manual intervention.

11 After you complete executing the DSfW Feature Configuration Wizard, you must verify if all the daemons are up and running by executing the following command:

```
xadcntrl status
```

12 Run the following command to verify if the schema has been extended, rights on the domain controller objects have been added, and the unique domain id on the domain root has been added.

```
/opt/novell/xad/sbin/domaincntrl --preps
```

Post-Migration Procedure

After the migration procedure has completed, you need to manually cleanup certain eDirectory objects. For more information, follow the instructions specified in Chapter 13, “Post Transfer ID Migration,” on page 85.

23 Migrating LUM to OES 2018 SP3

This section describes how to migrate LUM from a supported OES server to OES 2018 SP3.

- "Planning the Migration" on page 197
- "Migration Scenarios" on page 197

Planning the Migration

Make sure your setup addresses the following requirements before you migrate LUM to the destination platform.

- "Prerequisite" on page 197

Prerequisite

- If the source server is OES 2 SP2, the proxy credential retrieval binary (32 or 64 bit) for LUM (lum_retrieve_proxy_cred) should be copied to `/usr/bin` folder on the source server.

Migration Scenarios

The following three scenarios are supported for LUM migration:

- **Common Proxy Migration:** If LUM is configured to use common proxy, refer to "Services that are Using Common Proxy" on page 246.
- **Transfer ID Migration:** If LUM is not configured to use proxy user, refer to Part IV, "Transfer ID Migration," on page 59.

For common proxy and service specific proxy migration scenarios, you must also do a Transfer ID migration. Transfer ID migration effects changes such as setting of the nam configuration and mapping the target server with the existing eDirectory users and groups.

24 Migrating FTP to OES 2018 SP3

Migration refers to the process of migrating FTP services from a supported NetWare or OES server to a OES 2018 SP3 server. The Open Enterprise Server (OES) migration tools follow a source/target model. The following sections give you more details on the migration procedure for FTP.

- "Migrating FTP from Netware to OES 2018 SP3" on page 199
- "Migrating FTP to OES 2018 SP3" on page 202

Migrating FTP from Netware to OES 2018 SP3

This section describes how to migrate FTP from Netware or OES to OES 2018 SP3.

Planning the Migration

Make sure your setup addresses the following requirements before you migrate FTP to the destination platform.

- "System Requirements" on page 199
- "Source Servers" on page 199
- "Target Server" on page 199

System Requirements

- Pure-FTPd

Source Servers

- NetWare 6.5 SP8

Target Server

- OES 2018 SP3

Migration Scenarios

The following three scenarios are supported for FTP migration:

- Consolidation on the Same Tree
- Consolidation on a Different Tree
- Transfer ID on the Same Tree

  For details on these three scenarios, see "Migration Scenarios" on page 16.

Prerequisites

For all three scenarios, eDirectory should be running so eDirectory users can log in.

What is Migrated

When the migration is complete, the FTP parameters on NetWare are mapped to the corresponding parameters in Pure-FTPd on Linux. For details on mapped parameters, see Table 24-1 on page 201.

Migrating FTP

Migration of FTP configuration can be done from the Migration Tool or through the command line interface.

NOTE: Before you start the Pure-FTPd server, ensure that eDirectory is up and running on the target server. This is to ensure that all the eDirectory users can be used for Pure-FTPd access. For the Server ID Swap, all eDirectory objects are migrated as part of the DIB migration step. For complete details on eDirectory migration, read Appendix 17, “Migrating eDirectory to OES 2018 SP3,” on page 149.

- “Using the Migration Tool” on page 200
- “Using the Command Line” on page 200

Using the Migration Tool

1 Launch the Migration Tool in one of the following ways:

Desktop: Click **Applications > Other > Novell Migration Tools**

Terminal: Log in as the `root` user and at a terminal prompt, enter `miggui`

2 Configure the source and target parameters.

For details on configuring source and target server information, selecting a migration type, and the Open, Save Project, and all other tool buttons, see Chapter 2, “Overview of the Migration GUI,” on page 21.

3 Select **Novell FTP** from **Services** and click **Configure**. The status now changes from **Not Configured** to **Ready**.

4 When the status is **Ready**, click **Start** to start the migration process.

The status changes from **Migrating** to **Migrated** on success.

NOTE: Use the **Status** > **Logs** tab to check for errors during migration. Fix the errors and restart the migration procedure if necessary.

Using the Command Line

1 Run the FTP migration utility from the command line with the required parameters:

```
migftp -s <source_server>
```

For example:

```
migftp -s 192.168.1.54
```

If the migration is successful, a message indicating success is displayed.

2 Start the eDirectory server to allow eDirectory users to log in.

3 Start the FTP server by using the `rcpure-ftpd start` command.

Post-Migration Procedure

1 All the FTP services users must be LUM enabled.

2 Map these parameters during FTP migration from NetWare to Linux:

Table 24-1 *NetWare Linux FTP FTPd Mapping Parameters*

NetWare FTP Parameters	Linux Pure FTPd Parameters
SECURE_CONNECTIONS_ONLY	TLS
PASSIVE_PORT_MIN	PassivePortRange
PASSIVE_PORT_MAX	PassivePortRange
MAX_FTP_SESSIONS	MaxClientsNumber
HOST_IP_ADDR	Bind
FTP_PORT	Bind
FORCE_PASSIVE_ADDR	ForcePassiveIP
ANONYMOUS_ACCESS	AnonymousOnly
IDLE_SESSION_TIMEOUT	MaxIdleTime
DEFAULT_USER_HOME_SERVER	DefaultHomeDirectoryServer
DEFAULT_USER_HOME	DefaultHomeDirectory
IGNORE_REMOTE_HOME	EnableRemoteHomeDirectory

Important:

- If ANONYMOUS_ACCESS is commented irrespective of the value set to yes or no on the source server (NetWare), after migration the value set for AnonymousOnly on the target server (OES 2018 SP3) is retained.

  For example, #ANONYMOUS_ACCESS=yes or #ANONYMOUS_ACCESS=no is set on the source server, AnonymousOnly=yes or AnonymousOnly=no is set on the target server, whatever the value set on the target server is retained after migration.

  If ANONYMOUS_ACCESS is uncommented irrespective of the value set to yes or no on the source server (NetWare), after migration the value set for AnonymousOnly on the target server (OES 2018 SP3) is overwritten with the value set on the source server.

  For example, ANONYMOUS_ACCESS=no is set on the source server, AnonymousOnly=yes is set on the target server, AnonymousOnly will be set to no after migration.

- If you use BIND parameter in the NetWare `ftpserv.cfg` file, after migrating to OES, your FTP login will be blocked. This happens as FTP still tries to bind to the source IP address and port that you have specified in the NetWare `ftpserv.cfg` file.

  To resolve this issue, change the IP address and port to that of an OES target server. This workaround is not required in case of a Transfer ID migration.
- If Passive Port Range on NetWare is not set or is less than twice the number of maximum allowed clients, after migrating to Linux, set the PassivePortRange twice the MaxClientsNumber.

  For example, if you set MaxClientsNumber as 10, then set the PassivePortRange as 30000 30020.
- If SECURE_CONNECTIONS_ONLY is set in NetWare and an FTP migration certificate does not exist on Linux, a default FTP certificate (`/etc/ssl/private/pure-ftpd.pem`) is created, using either an eDirectory certificate (`/etc/ssl/servercerts/eDircert.pem`) of the target server or the server certificate (`/etc/ssl/servercerts/servercert.pem`). If neither of them exists, the migration creates a certificate with default parameters. The admin can replace this by creating a new certficate using the steps listed in "Create Certificate Procedure" (http://download.pureftpd.org/pub/pure-ftpd/doc/README.TLS).
- The ForcePassiveIP field in NetWare when left blank or set as 0.0.0.0 indicates *none* specified. However, on linux, it is interpreted as is and therefore can lead to server binding to invalid IP address resulting in loss of functionality. The migration script is updated to ignore IP 0.0.0.0, and created `.bak` file for preserving the original linux conf file for administrative reference.

Migrating FTP to OES 2018 SP3

This section describes how to migrate FTP from a supported OES environment to OES 2018 SP3.

Before you proceed with the migration, review "Prerequisites" on page 202. In this section, the source server refers to a supported OES server and the target server refers to an OES 2018 SP3 server.

- "Prerequisites" on page 202
- "What is Migrated" on page 202
- "Migration Procedure" on page 203

Prerequisites

- Ensure that OES 2018 SP3 server is already installed along with the FTP pattern on the target server. For details see, "Installing Pure-FTPd" in the *OES 2018 SP3: Planning and Implementation Guide*.

What is Migrated

- Configuration file and script

Migration Procedure

Same tree migrations with identity transfer

Perform the following procedures on the target server:

1. Copy the `/etc/pure-ftpd/pure-ftpd.conf` file from the source server.

   NOTE: If the migration is being performed on a cluster setup, copy the `pure-ftpd.conf` file on the shared volume of cluster.

2. Run `/opt/novell/pure-ftpd/novell-pure-ftpd-config.sh` script. This will update the `pure-ftpd.conf` file with the new parameters added in OES2015 or later.
3. Remove LD_PRELOAD statement from the `/usr/lib/systemd/system/pure-ftpd`.service file, if present.
4. Restart pure-ftpd using the `systemctl restart pure-ftpd.service` command.

Same tree migrations without identity transfer

1. Execute steps Step 1 to Step 3.
2. Update the IP address of the target server for ForcePassiveIP and Bind parameters in the `pure-ftpd.conf` file.
3. Update DefaultHomeDirectoryServer if it refers to the IP of the source server.

25 Migrating iPrint to OES 2018 SP3

Migration refers to the process of migrating iPrint from supported NetWare or OES versions to OES 2018 SP3. For general information about the OES 2018 SP3 Migration Tool, see Chapter 1, "Overview of the Migration Tools," on page 15.

The following sections give more details on the migration procedure for iPrint.

- "Prerequisites" on page 205
- "Supported Migration Scenarios" on page 206
- "What is Migrated" on page 206
- "Migration Procedure" on page 207
- "Migrating an iPrint Cluster Resource" on page 216
- "Migrating ZENworks iPrint Policies" on page 217
- "Verifying Migration" on page 219
- "Cleaning Up Stale Objects" on page 220
- "Troubleshooting iPrint Migration" on page 221
- "iPrintmig Man Page" on page 227

Prerequisites

This section covers the migration prerequisites for all the migration scenarios supported by iPrint.

- "Platform Specifications" on page 205
- "General Prerequisites" on page 206

Platform Specifications

- "Target Server Requirements" on page 205

Target Server Requirements

- OES 2018 SP3 server with iPrint installed, and with Print Manager and the Driver Store configured. For more information, see "Installing and Setting Up iPrint on Your Server", "Creating a Print Manager", and "Creating a Driver Store" in the *OES 2018 SP3: iPrint Administration Guide*.

IMPORTANT: If your target server is in a non-replica eDirectory tree, both the target Driver Store and Print Manager must be active for migration to be successful. Configure SLP to make them active. For details on SLP configuration, see "Configuration Parameters" in the *NetIQ eDirectory Administration Guide*.

General Prerequisites

- Before starting the migration, ensure that the source and target Print Managers are running. If you are using command line tools for migration, ensure that the source Print Managers are running.
- When you upgrade to OES, ensure that you migrate NDPS to iPrint. NDPS is not supported on OES Linux.
- Ensure that the file containing the printers to be migrated does not contains extra spaces or characters. For troubleshooting extra spaces, see "Printers are not migrating with the -f option" on page 222.
- Ensure that the driver paths are correct and accessible. For troubleshooting a bad driver assignment, see "Invalid driver path assignments" on page 223.
- Ensure that you retain the Print Agent redirection on the source servers.
  - For Linux source servers, follow the instructions in "Creating a Print Manager" in the *OES 2018 SP3: iPrint Administration Guide*.
- Ensure that the user has the following rights and permissions assigned explicitly on the source server so that the user can access and execute the `psminfo.nlm`, even if there is a mismatch of source server and container admin credentials for the user:
  - Read permission to `sys:ndps` folder on the migration source server.
  - Add the user as a trustee with supervisor rights to the source server NCP server object.
- Back up the Print Manager database files on the source server prior to migration. For Linux, see "Understanding the Print Manager Database".
- The servers involved should be accessible via SSH. If the SSH ports are not open in the firewall, ensure that they are open before trying to access the servers.

Supported Migration Scenarios

iPrint supports the following migration scenarios:

- Migrating servers within the same eDirectory tree
- Migrating servers across different eDirectory trees
- Migrating servers through consolidation
- Migrating servers through a Transfer ID

For more information about these scenarios, see "Migration Scenarios" on page 16.

What is Migrated

During the migration process, the following objects are replicated seamlessly from the source server to the target server:

- Printers
- Drivers
- Banners

- Printer pools
- Redirected printers
- ACL (only if the source and target servers are in the same tree)
- Printer profiles
- The `iPrint.ini` file (only if the source server is NetWare 6.5)
- iPrint Client Management (only if the source and target servers are in the same tree and are sharing a common user)

Migration Procedure

Perform the following tasks for iPrint migration.

- "Pre-Migration iPrint Configuration" on page 207
- "iPrint Consolidate Migration" on page 208
- "Verifying the Result of the iPrint Migration" on page 215
- "Transfer ID" on page 215

Pre-Migration iPrint Configuration

Perform the following pre-migration steps on the target server:

1. Create the Driver Store. For more information, see "Creating a Driver Store" in the *OES 2018 SP3: iPrint Administration Guide*.

   If the eDirectory server1 value is not pointing to a server that holds a reliable replica, go to `/etc/opt/novell/iprint/conf/idsd.conf` and modify the eDirectory server1 value to a server that holds a reliable replica. Change the IDSHostAddress value to the IP address (temporary IP address) of the migration server. Restart the Driver Store (`rcnovell-idsd restart`).

2. Create the Print Manager. For more information, see "Creating a Print Manager" in the *OES 2018 SP3: iPrint Administration Guide*.

   If eDirectory server1 value is not pointing to a server that holds a reliable replica, go to `/etc/opt/novell/iprint/conf/ipsmd.conf` and modify the eDirectory server1 value to a server that holds a reliable replica. Change the PSMHostAddress value to the IP address (temporary IP address) of the migration server. Restart the Print Manager (`rcnovell-ipsmd restart`).

3. Change the iPrint Apache configuration.

   If AuthLDAPDNURL is not pointing to a reliable LDAP server, change AuthLDAPDNURL in `/etc/opt/novell/iprint/httpd/conf/iprint_ssl.conf` to a reliable LDAP server. Restart Apache (`rcapache2 restart`).

4. Ensure that the admin user is LUM-enabled.

   To check this, enter `id admin` at the terminal. If the admin user is LUM-enabled, UID and GID information is returned.

5. Ensure that iprintman authentication is successful.

   To check the authentication by using the IP address, enter

`iprntman psm -l -s <IP address>`

To check the authentication by using the DNS name, enter

`iprntman psm -l -s <DNS name>`

6 Test iPrint prior to the migration on the target server.

Using iManager, view the Print Manager and Driver Store. Click a few options to verify that you do not encounter any errors.

7 Continue with "iPrint Consolidate Migration" on page 208.

NOTE: You can run `psminfo.nlm` on the source server, then copy the `psminfo.xml` file to the target server at the `/opt/novell/iprint/share` location. This avoids contacting the source server during migration.

---

iPrint Consolidate Migration

Migration of the iPrint configuration can be done through the Migration Tool or through the command line interface.

- "Using the Migration Tool" on page 208
- "Using the Command Line Utility" on page 214

NOTE: When you migrate iPrint from NetWare to OES 11 SP2, Public Access Printers are not migrated.

Using the Migration Tool

1 Launch the Migration Tool on the target server in one of the following ways:

Desktop: Click **Applications > Other > Novell Migration Tools**.

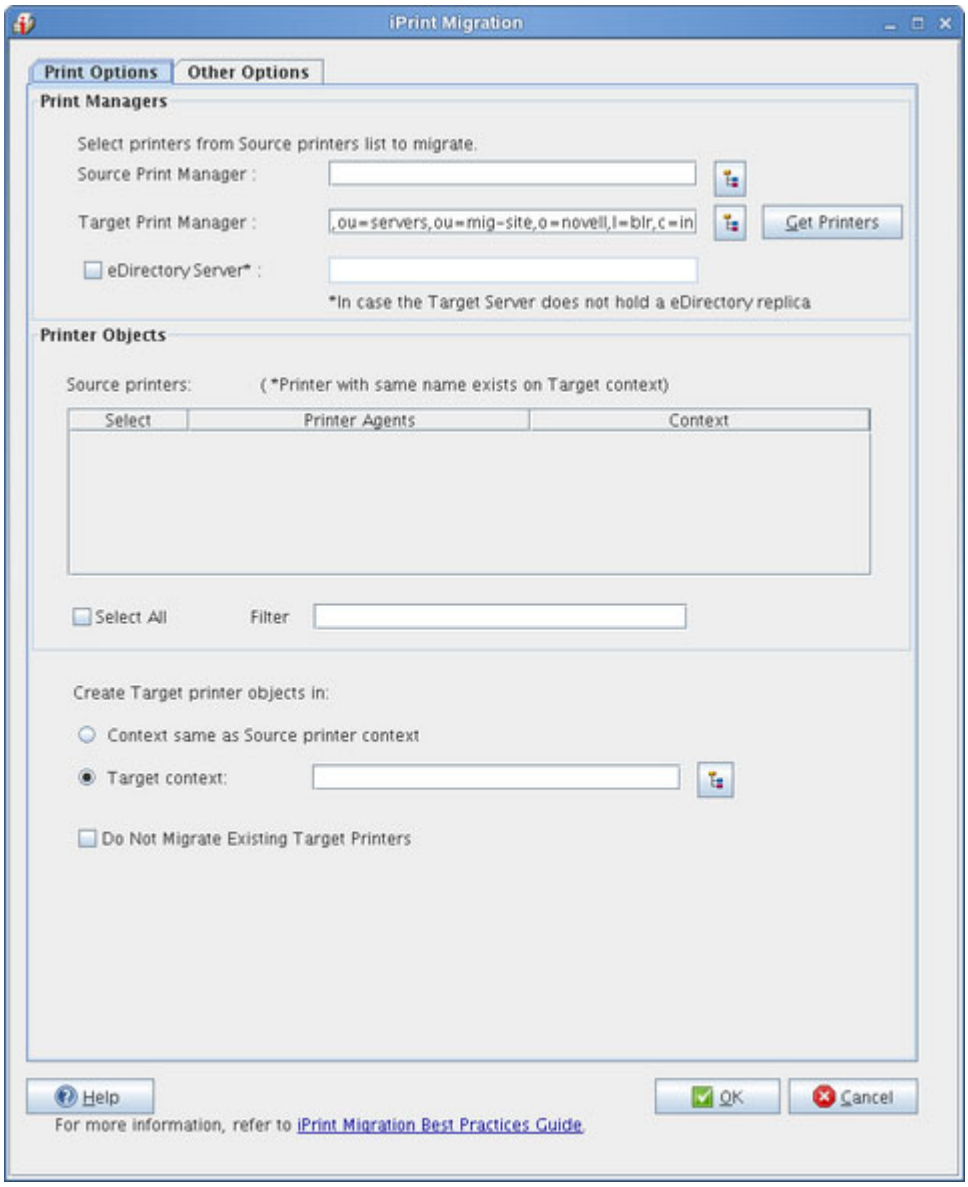
Terminal: Log in as the `root` user and enter `miggui` at the terminal prompt.

For details on configuring the source and target server information, selecting a migration type, opening a project, and on all the tool buttons, see Chapter 2, "Overview of the Migration GUI," on page 21.

2 Authenticate to the source and target servers.

3 Click **Add**.

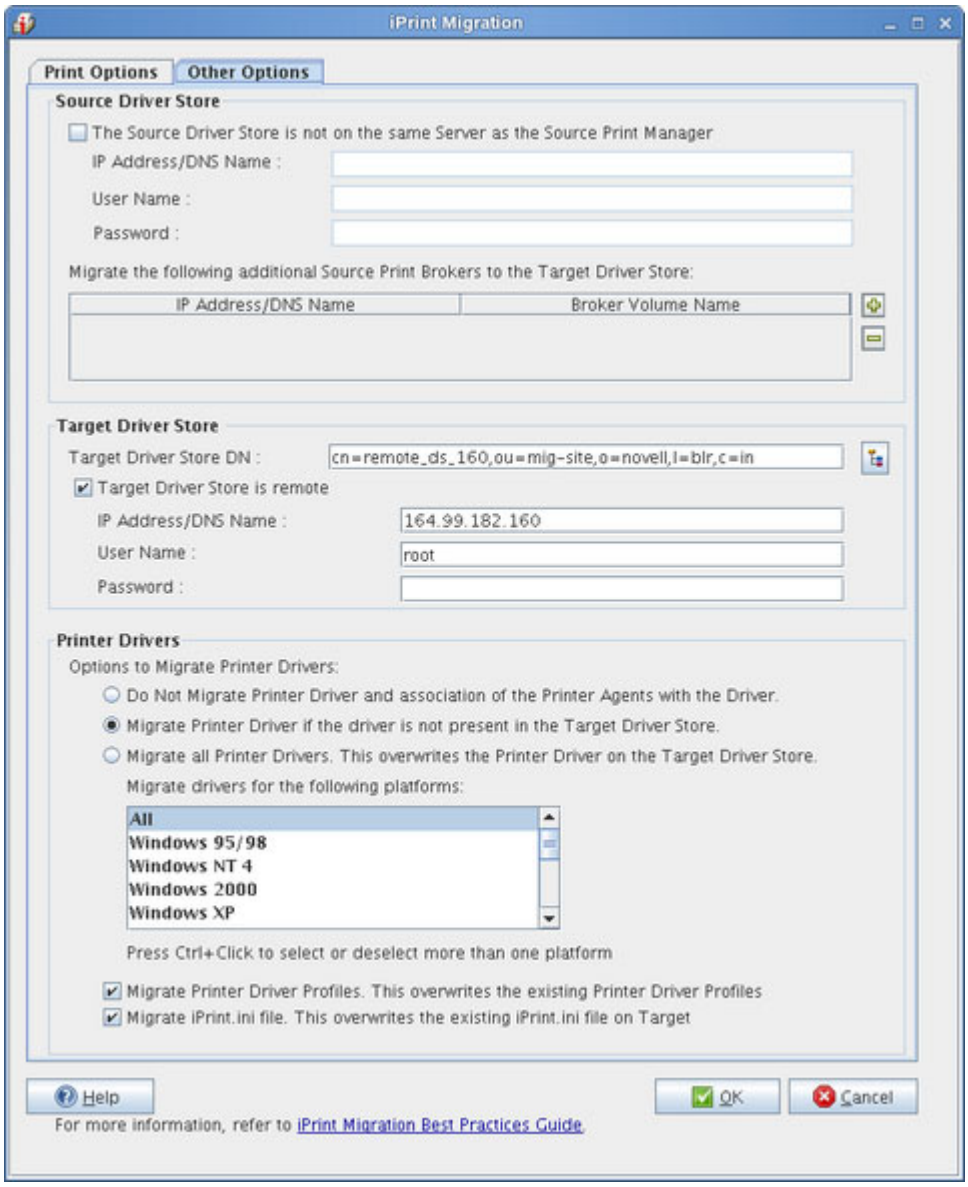
4 Select **Novell iPrint**, then click **Yes** to configure. The iPrint configuration window is displayed.



5 Configure the following parameters to proceed with the migration process:

Print Objects	Parameter	Description
Print Managers	Source Print Manager	Specify the active Print Manager on the source server. The source Print Manager can be either an NDPS manager (for NetWare 6.5) or iPrint Manager (for OES Linux). To go directly to a context of your choice, specify the context in the search base and click Search. The objects in the specified context are displayed.

Print Objects	Parameter	Description
	Target Print Manager	The **Target Print Manager** field is populated with the name of the active Print Manager running on the target server. This field is editable, and you can also specify a different name for the active Print Manager. To go directly to a context of your choice, specify the context in the search base and click **Search**. The objects in the specified context are displayed. Click **Get Printers** to select printer objects from the source Print Manager. Click **Get Printers** to select printer objects from the source Print Manager.
	eDirectory Server	Select this option if the target server does not hold an eDirectory replica. Specify the IP address of the target server that holds the reliable eDirectory replica.
Printer Objects	Source printers	Displays all the printers of the active Print Manager available on the source server. The printers that already exist on the target server are indicated by an asterisk (*).
	Select All	Selects all the printers listed in the Printer Objects dialog box. **NOTE:** When you apply a new filter, or modify an existing filter and click **Select All**, only printers that are displayed after applying the filter are selected. When you manually select all printers, the selected printers are migrated.
	Filter	Specify the search pattern in the **Filter** field. This displays the printers in the Printer Agents list. This field is case sensitive.
Create target printer objects in	Context same as source printer context	Select this option to use the same context as the source printers on the target server. **NOTE:** If you are migrating to a different tree, and you select **Context same as Source printer context**, you must ensure that the context exists in the target tree.
	Target context	This option is selected by default. It allows you to create source printers under a different context on the target server. This option does not maintain the context hierarchy of the source printer. To go directly to a context of your choice, specify the context in the search base and click **Search**. The objects in the specified context are displayed.
	Do Not Migrate Existing Target Printers	If the printer names on source server match the printer names on the target server, the target printer properties and attributes are overwritten by the source printer properties and attributes. The printers that already exist on the target server are represented by an asterisk (*).

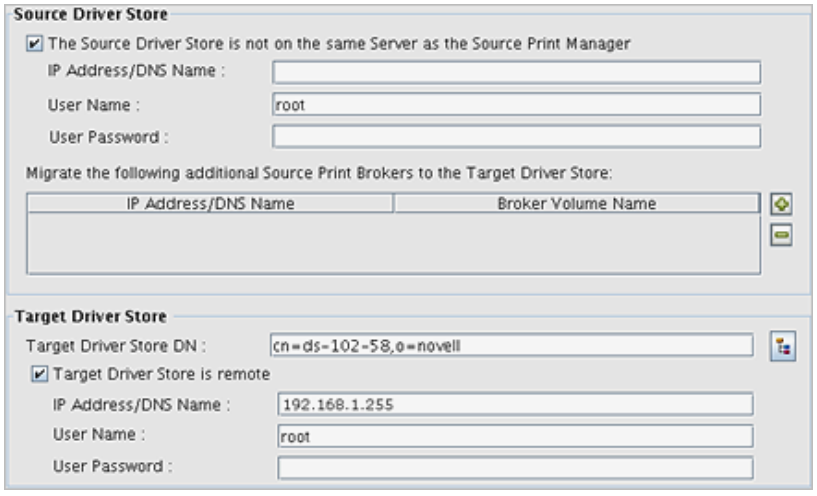

iPrint Migration
Print Options
Other Options
Source Driver Store
The Source Driver Store is not on the same Server as the Source Print Manager
IP Address/DNS Name :
User Name :
Password :
Migrate the following additional Source Print Brokers to the Target Driver Store:
IP Address/DNS Name
Broker Volume Name
Target Driver Store
Target Driver Store DN :
cn=remote_ds_160,ou=mig-site,o=novell,l=blr,c=in
Target Driver Store is remote
IP Address/DNS Name :
164.99.182.160
User Name :
root
Password :
Printer Drivers
Options to Migrate Printer Drivers:
Do Not Migrate Printer Driver and association of the Printer Agents with the Driver.
Migrate Printer Driver if the driver is not present in the Target Driver Store.
Migrate all Printer Drivers. This overwrites the Printer Driver on the Target Driver Store.
Migrate drivers for the following platforms:
All
Windows 95/98
Windows NT 4
Windows 2000
Windows XP
Press Ctrl+Click to select or deselect more than one platform
Migrate Printer Driver Profiles. This overwrites the existing Printer Driver Profiles
Migrate iPrint.ini file. This overwrites the existing iPrint.ini file on Target
Help
OK
Cancel
For more information, refer to iPrint Migration Best Practices Guide

Other Options	Parameter	Description
Source Driver Store	The Source Driver Store is not on the same server as the Source Print Manager	If the source Driver Store is running on a server different from the source Print Manager's server, this check box is selected. Specify the IP address or the DNS Name and the root password of the server on which the source Driver Store is located. For more details on using this panel, see Step 6 on page 213.

Other Options	Parameter	Description
	Migrate the following additional Source Print Brokers to the Target Driver Store	This section lists the names and IP/DNS addresses of the source Print Broker volumes that need to be migrated to the target Driver Store. Use the + and - icons to add and delete the source Print Brokers.
Target Driver Store	Target Driver Store DN	The **Target Driver Store DN** field is auto populated with the Driver Store associated with the PSM object, if the driver store is running. This field is editable, and you can also specify the name of the Driver Store. To directly go to a context of your choice, specify the context in the search base and click **Search**. The objects in the specified context are displayed. Specify the IP address or the DNS name and the root password of the server on which the source Driver Store is located. For more details on using this panel, see Step 6 on page 213. To directly go to a context of your choice, specify the context in the search base and click **Search**. The objects in the specified context are displayed. **IMPORTANT:** If the target Driver Store is hosted by a server that is not hosting the Print Manager, you cannot select the Driver Store's eDirectory server. To resolve this, go to the Driver Store's `/etc/opt/novell/iprint/conf/idsd.conf` file and update the DSServer1 value to the address of a server that holds the replica. Restart the Driver Store (`rcnovell-idsd restart`) after making the change.
	Target Driver Store is remote	If the Driver Store is running on the remote server (other than the target server), the **Target Driver Store is remote** check box is enabled. Specify the IP address or the DNS name of the remote server and the root password of the remote server in the corresponding entry fields.
	Additional source Print Broker to be migrated to the above target Driver Store (optional)	Click the plus button (+) and specify the IP address or the DNS name of the Source Broker. Select the Source Broker volume from the drop-down list and click **OK**. The list is populated with the IP address or DNS name of the Source Broker and Broker volume name. You can add multiple Source Brokers to the list. To remove the Source Broker from the list, select the IP address or DNS name and click the minus button (-). You can remove one Broker at a time.
Printer Drivers	Do not Migrate Printer Drivers and the association of the Printer Agents with the Driver	Selecting this option ensures that printer drivers and the association of Printer Agents with the drivers are not migrated.

Other Options	Parameter	Description
	Migrate Printer Driver if the driver is not present in the target Driver Store	Selecting this option migrates the printer drivers for the driver platforms you have selected from the Select Driver Platforms to Migrate list if they are not present in the target Driver Store. This also migrates all the associations of the Printer Agents with the driver. **NOTE:** The default driver platform selection is **All**.
	Migrate all Printer Drivers. This overwrites the Printer Driver on the target Driver Store	Selecting this option overwrites the target drivers for the driver platforms you have selected from the Select Driver Platforms to Migrate list, if the driver names in the target Driver Store are same as the source Driver Store. This also migrates all the associations of the Printer Agents with the driver. **NOTE:** The default Driver Platform selection is **All**.
Printer Driver Profile	Migrate Printer Driver Profile	If the profiles are the same on the target server as the source server, the target profiles are overwritten.
iPrint.ini File	Migrate iPrint.ini File	If you migrate printer agents from two or more print managers, the `iPrint.ini` file on the target server is replaced by the `iPrint.ini` of the last source server. **NOTE:** After migration, if the target server's `iprint.ini` file is overwritten by the source server's file, and if the target server's `iprint.ini` file had new parameters that were erased, you can restore them by copying the parameters manually from the `iprint.bak` file. The `iprint.bak` file is a backup of the target server's `iprint.ini` file. After migration, the `iprint.bak` file is saved in the `/var/opt/novell/iprint/htdocs` directory.

6 In the **Source Driver Store** and **Target Driver Store** panels, the default user name is displayed as **root**. To use a user name other than **root**, make the following changes:


Source Driver Store
The Source Driver Store is not on the same Server as the Source Print Manager
IP Address/DNS Name :
User Name :
root
User Password :
Migrate the following additional Source Print Brokers to the Target Driver Store:
IP Address/DNS Name
Broker Volume Name
Target Driver Store
Target Driver Store DN :
cn=ds-102-58,o=novell
Target Driver Store is remote
IP Address/DNS Name :
192.168.1.255
User Name :
root
User Password :

- Add the intended user name to the sudoers database by using the following command -

```
<new non-root user name>  ALL = (ALL) ALL
```

- Comment out the following two lines from `visudo -f /etc/sudoers`:

  1. `Defaults targetpw # ask for the password of the target user i.e. root`
  2. `ALL ALL=(ALL) ALL  # WARNING! Only use this together with 'Defaults targetpw'!`

  This ensures that the system does not prompt you for a root password.

7 Click **OK** to finish the configuration and go back to the migration screen.

8 Click **Migrate**.

Using the Command Line Utility

You can use `iprintmig` to migrate iPrint. For more information, see "iPrintmig Man Page" on page 227.

Use one of the following methods to migrate to OES 2018 SP3:

- From a terminal prompt on the target server, run `iprintmig` to migrate the printers on the source server to the target server. Before running the utility, set the environment variable for safely transferring the password.

  For safe transmission of passwords to the script via an environment variable or via the -P/-T options, see "Using Passwords" on page 231.

  IMPORTANT: This method is safe and recommended.

  Syntax: `iprintmig -s source_server -u source_username_only -U target_username_only -a -x psminfo.xml -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us`

- From a terminal prompt on the target server, run `iprintmig` to migrate the printers on the source server to the target server by specifying the password.

  IMPORTANT: The password is visible to users in this method.

  Syntax: `iprintmig -s source_server -u source_username_only -p source password -U target_username_only -t target password -a -x psminfo.xml -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us`

Migrating One Printer at a Time

Example: `iprintmig -s source_server_name -u source_admin -U target_admin -n printer1 -x psminfo.xml -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us -N`

Migrating a Few Printers at a Time

Example: `iprintmig -s source_server_name -d target_server_name -u source_admin -U target_admin -x psminfo.xml -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us -n printer1 -n printer2 -n printer3 -n printer4 -L`

Migrating All Printers

Example: `iprintmig -s source_server_name -d target_server_name -u source_admin -U target_admin -x psminfo.xml -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us -a -N`

Migrating Printers by Using SSL

Example: `iprintmig -s source_server -u source username -U target username -a -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us -ssl -port LDAP port -N`

Migrating Printers without SSL

Example: `iprintmig -s source_server -u source username -U target username -a -I cn=ids,o=example,c=us -i ids.example.com -c ou=iPrint,o=example,c=us -port LDAP port -N`

IMPORTANT: Ensure that you verify the result of iPrint migration after completing migration, as described in "Verifying the Result of the iPrint Migration" on page 215.

Verifying the Result of the iPrint Migration

1. Open iManager on the server you use for iPrint management.
2. Install some printers on the test workstation.
3. Run reports to verify all the migrated information:
   - **3a** Go to `https://<MigrationServerIP>/PsmStatus/GenerateReportSettings`.
   - **3b** Select the check box for *Printer Drivers*, *Associated NDS Printer*, and other options for the NetWare Printer Agents.
   - **3c** Click **Generate Report**.
   - **3d** Verify that all the printer agents have the expected values.

Transfer ID

To perform an identity transfer, configure the iPrint service for migration, then select **Transfer ID**. This migrates iPrint to an OES 2018 SP3 server, and then transfers the source server's identity. Migrate iPrint services to the target server before starting the Transfer ID process. For more information, see Chapter 10, "Using the Migration GUI Tool for Transfer ID," on page 65.

Before starting the Transfer ID process you must migrate all services to the target server. See Chapter 9, "Preparing for Transfer ID," on page 61.

IMPORTANT: Do not start the Transfer ID process until the migrated iPrint service on the target server successfully completes the outlined tests. To verify the result of iPrint migration, see "Verifying the Result of the iPrint Migration" on page 215.

Migrating an iPrint Cluster Resource

Perform the following steps to migrate the iPrint cluster resource from NetWare to OES 2018 SP3 without reinstalling the printers on the workstations.

NOTE: When you upgrade to OES, ensure that you migrate NDPS printers to iPrint. NDPS is not supported on OES Linux. For more information, see "How to automate the upgrade from NDPS to iPrint" (http://www.novell.com/support/php/search.do?cmd=displayKC&docType=kc&externalId=7004661&sliceId=2&docTypeID=DT_TID_1_1&dialogID=159879519&stateId=0%200%20159881359)

---

1. Set up iPrint for a cluster environment.

   For more information, see "Setting up the Cluster Environment for iPrint" in the *OES 2018 SP3: iPrint Administration Guide*.

2. Migrate the target cluster resource hosting iPrint from node to node.

   On each node, check the status of the Print Manager and Driver Store.

   ```
   rcnovell-ipsmd status
   ```

   ```
   rcnovell-idsd status
   ```

   Test the ability of the Print Manager to authenticate the admin user (or the user given in the Migration Tool.

   ```
   iprntman psm -l -u admin
   ```

3. Perform the pre-migration for iPrint configuration.

   For more information, see "Pre-Migration iPrint Configuration" on page 207.

4. Perform a consolidated migration of the iPrint service. For more information, see "iPrint Consolidate Migration" on page 208.

   When the source or target iPrint service is hosted on a cluster resource, transferring a node's identity is not necessary and not recommended.

5. Verify the result of the iPrint migration.

   For more information, see "Verifying the Result of the iPrint Migration" on page 215.

6. Transition end-user printing from NetWare to Linux:

   6a Offline the NetWare iPrint cluster resource.

   6b View the NetWare iPrint cluster load script's /DNSNAME value.

   6c Configure DNS to resolve the /DNSNAME value to the IP address of the target Linux cluster resource hosting the Print Manager.

   The propagation of the DNS change might take time, depending on your network.

   DNSNAME is the address that the clients use to find the NetWare Print Manager. The same DNSNAME is used to find the Linux Print Manager.

   6d Update each of the Linux node `/etc/hosts` files to resolve to the Linux iPrint cluster IP address.

6e Update the `/etc/opt/novell/iprint/conf/ipsmd.conf` PSMHostAddress value to the /DNSNAME.

6f Restart the Print Manager.

7 Perform the post-migration steps. For more information, see xxxx.

Migrating ZENworks iPrint Policies

The ZENworks 10 Configuration Management and ZENworks 7 iPrint policies contain a list of printers to be distributed via the policy. The printer names are back-linked to the eDirectory object of the corresponding printer. When the iPrint service is migrated from source server to an OES 2018 SP3 server, iPrint policies containing migrated printers must also be updated. For example, if the ZENworks7 iPrint policy contains a printer from the source server, after migration it must contain a corresponding printer from the target server.

The `novell-iprint-migration.rpm` also contains the scripts for migrating ZENworks 10 Configuration Management and ZENworks 7 policies. You must run the scripts to migrate the policies.

IMPORTANT: The target server and the source server must be in the same tree and in the same container.

- "Policy Migration in ZENworks 10 Configuration Management" on page 217
- "Policy Migration in ZENworks 7" on page 218

Policy Migration in ZENworks 10 Configuration Management

- "Prerequisites" on page 217
- "Options" on page 218

Prerequisites

- The file with the list of printers to be migrated must be copied from the target server to the ZENworks 10 Configuration Management server.
- Ensure that the latest version of ZENworks 10 Configuration Management is installed. You can get the ippmanagement utilities from there.
- Install Perl on your server to run the policy migration script on the ZENworks 10 Configuration Management windows server.

Syntax: `zcm-migrate-print-policy.pl -a` <*Administrator name*> `-p` <*Administrator password*> `-s` <*Source server*> `-d` <*Destination server*> .

The `zcm-migration-print-policy.pl` script is located in `/opt/novell/bin`. Copy and run the script on the ZENworks 10 Configuration Management server. This script copies the original printer policies and the policies are formed in the target server. If you encounter any error, refer to the log file available at `zcm10-migration.log`.

Options

`-a, --admin`

Administrator name.

`-p, --passwd`

Administrator password.

`-P, --port`

(Optional) Port number (The default port is 80).

`-l, --linux`

(Optional) The source operating system is Linux.

`-n, --netware`

(Optional) The source operating system is NetWare.

`-s, --src`

Source server IP address or the DNS name.

`-d, --dest`

Target server IP address or the DNS name.

`-r, --rem`

(Optional) Deletes old policies.

`-c, --change`

(Optional) Changes the default printer.

`-f, --file`

The filename that has the list of printers to be migrated.

`-x, --xml`

(Optional) The directory containing the policies in XML form.

Policy Migration in ZENworks 7

The `zen7-migration-print-policy.pl` script is located in `/opt/novell/bin/`. Run the script on the target server where the replica of the eDirectory tree is present. This script copies the original printer policies, and the policies are defined on the target server. If you encounter any error, refer to the log file at `/var/opt/novell/log/iprint/zenpolicy_migration.log`.

Syntax: `<script name> -v -v -v <log file> -s <Host name or IP address> -a <Administrator FDN> -p <Administrator password> -b <Base DN> -d <Keep default> -r <Deletes the old policies> -n <Source Operating System> -f <Filename containing a list of files containing migrated printer list>`.

Options:

`-v -v -v`

Log file.

`-s, --host`

Hostname or IP address. Source server IP address.

`-a, --admin`

Administrator FDN (such as cn=admin,o=novell).

`-p, --passwd`

Administrator password.

`-b, --base-dn`

DN of a container to search for the ZENworks 7 iprint policy objects (e.g. o=*novell*).

`-d, --keepdefault`

Retains your default printer in the ZENworks 7 policy.

`-l, --linux`

The source operating system is Linux (For an ID swap always specify -l, even if the source is Netware.).

`-n, --netware`

The source operating system is NetWare.

`-f, --file`

A filename that has a list of printers to be migrated.

For more information on ZENworks, refer to ZENworks 10 Configuration Management (http://www.novell.com/documentation/zcm10/index.html).

Verifying Migration

After migration is complete, the desired Print Manager on the target server must be active. This ensures that the migration has been successfully completed. Use the procedures in this section to check for the Print Manager and printers.

- “Using iManager” on page 220
- “Using the Command Line” on page 220

IMPORTANT: If the Print Manager is down after migration, see “Troubleshooting iPrint Migration” on page 221.

Using iManager

1. Open iManager on the target server.
2. Go to **iPrint** > **Manage Print Manager**.
3. Specify the **iPrint Manager name** or **NDPS Manager name**.
4. Click **OK**, then ensure the Print Manager status is *Active*.
5. Click **Printer Agents**.

   Depending on your setup, it might take some time to display the printers on the target server.

Using the Command Line

1. At the console, enter `iprintman psm -l -u admin`.
2. Enter the admin password when prompted.

   This displays the status of all the Print Managers with their status. Ensure that the desired Print Manager is *Active*.
3. At the console, enter `iprintman printer -l -u admin`.
4. Enter the admin password when prompted.

   This displays the printers on the target server.

Cleaning Up Stale Objects

You can clean up stale iPrint objects by using the `/opt/novell/iprint/bin/iprintcleanup.pl -s <source_server> -u <source_user(FDN format)> --ssl --port <LDAP_Port> -f <filename>` command.

`-h | --help`

Print the summary

`-s | --src <source_server>`

Source server IP address.

`-u | --src-user <user>`

Admin user FDN for the source server. For example, cn=admin,o=novell.

`-p | --src-pass <pswd>`

Password of the source server admin user.

`-f | --renamed-printers-file <filename>`

Filename to clean up. For example, `/etc/opt/novell/iprint/conf/renamed_printer_objects`.

`--ssl`

Use this option if SSL is enabled on the server.

`--port`

LDAP enabled port.

Troubleshooting iPrint Migration

- "iPrint Service Does not Work After Transfer ID Process" on page 221
- "Printers are not migrating to OES" on page 222
- "Target server authentication fails in a cluster environment" on page 222
- "Printers are not migrating with the -f option" on page 222
- "Invalid driver path assignments" on page 223
- "Printers are not migrating in the same eDirectory tree under the same context" on page 223
- "Migration fails even after a pre-check is passed" on page 224
- "Migration fails when the Print Manager does not have a clean shutdown" on page 224
- "Migration fails when a printer is assigned to a Print Manager" on page 224
- "Migration fails when the SYS volume folder is not available on the source server" on page 224
- "Migration fails for container admin credentials on the source server" on page 224
- "Migration fails with an error message" on page 225
- "The Driver Store and Print Manager are not initialized after migration on the target server" on page 225
- "Printers not coming up after Transfer ID migration" on page 225
- "Printer fails to install with the error "wrong printer URL"" on page 226
- "Migration is completed with the status displaying as "Successful with warnings. Please refer the migration log"" on page 226
- "Printers migrated from the source to target in the same context, are not migrated to the target in a different context" on page 226
- "Problems with accessing newly created printer agents after copying the padbtxt.xml file from the source to the target" on page 226
- "Redirections are not successful when printers are migrated" on page 227

iPrint Service Does not Work After Transfer ID Process

Source: The iPrint service does not work after the Transfer ID process is complete.

Action: On completion of the Transfer ID process, confirm the following values:

1. Go to `/etc/opt/novell/iprint/conf/ipsmd.conf` and change the PSMHostAddress value to the source server's IP address or DNS name (preferably a CNAME was used). Use the address that was used when you loaded with the /dnsname or /ipaddress switch. If you are unsure, view the name by which the iPrint printers are installed at the workstations.
2. Change the eDirectory server1 value to a reliable eDirectory server address.
3. Go to `/etc/opt/novell/iprint/conf/idsd.conf` and change the IDSHostAddress value to the source server's IP address or DNS name (which is now the target server's IP or DNS).

4 Change the eDirectory server1 value to a reliable eDirectory server address.

5 Go to `/etc/hosts` and ensure that entries are correct for the new identity.

6 Go to `/etc/opt/novell/iprint/httpd/conf/iprint_ssl.conf` and update the AuthLDAPDNURL "ldaps://[address..]" to any reliable LDAP server.

7 Go to `/etc/opt/novell/iprint/httpd/conf/iprint_g.conf` and update the address after the ServerName entry. Ensure that you choose the new identity IP address.

8 Restart the Print Manager (`rcnovell-ipsmd restart`), Driver Store (`rcnovell-idsd restart`), and Apache (`rcapache2 restart`).

9 Use iManager to test iPrint by using the Print Manager, Driver Store, and printers.

If you encounter an error while managing the Print Manager, one of the certificates may need to be updated. To troubleshoot, see the Cool Solutions article "Certificate Re-creation Script for OES" (https://www.novell.com/communities/coolsolutions/cool_tools/certificate-recreation-script-oes1-and-oes2/).

Printers are not migrating to OES

Explanation: Occasionally the iPrint migration status is successful but the specified Print Manager is not active or is down, and so printers are not migrated to the OES server.

Possible Cause: Some other Print Manager is active or is already loaded on the OES server.

Action: On the OES server:

1 Search for the ipsmd daemons by executing the `ps ax | grep ipsmd` command. This displays two running ipsmd processes.

2 Kill the individual ipsmd daemons by executing `kill -9 pid_of_ipsmd`

3 Restart migration by executing `iprintmig`.

Target server authentication fails in a cluster environment

Explanation: The loopback address is not authenticated.

Possible Cause: The loopback address is not being resolved to the IP address of the target server in the cluster environment.

Action: Enter the IP address or DNS name of the target server.

Printers are not migrating with the -f option

Explanation: `iprintmig` skips adding printers from the file containing the printer list.

Possible Cause: If the file with the printers to be migrated contains extra spaces or characters, the file is skipped by the utility.

Action: Delete the extra spaces or characters and restart the migration process.

Invalid driver path assignments

Explanation: Specific printers are not being migrated, and you see the error message `XMLToDoCIMInstance::doWork(): CIMException encountered (general error) <Operating System Name> GetDriverInfo failed:<Printer Name>` during migration.

Possible Cause: The printers are associated with deleted or missing drivers.

Possible Cause: The driver is associated with a remote path that no longer exists. The path can be a remote server or an unmounted volume.

Action: Verify the driver path and generate a report to correct the driver assignment:

1. In iManager, select **Manage Print Manager**.
2. Select an **NDPS Manager**.
3. Click **OK**.

   NOTE: If the Print Manager is down, click **Startup** to change the status to **Active**.

4. Click **Printer Agents Configuration Report**.
5. Select one or more configuration options for the operating system name displayed in the error message.
6. Click **Generate Report**.
7. The driver assignment path is displayed for individual Printer Agents in the report.
8. Verify that the complete driver path is a valid assignment.
9. (Conditional) If the path is invalid, select **Manage Printer** and do the following:
   - **9a** Choose a required printer under **NDPS Printer Name**.
   - **9b** Click **OK**.
   - **9c** In the **Drivers** tab, select the specific operating system for which the assignment is invalid. A message displays this message - `The current driver does not exist`.
   - **9d** Click **OK**.
   - **9e** Select either **NONE** or a suitable driver.

Printers are not migrating in the same eDirectory tree under the same context

Explanation: Printers are not being migrated, and you see an error message: `CIMException encountered (general error): Creation of printer 'CN=<PrinterName>,o=<organization>' object failed. Object exists, but failed to get iPrintPrinterManager value.`

Possible Cause: The migration was in the same eDirectory tree, and the source Print Manager and target Print Manager were under the same context.

Action: Use iManager to create a Print Manager on the target server in a different context. Restart the migration with the target Print Manager as the newly created Print Manager.

Migration fails even after a pre-check is passed

Explanation: When you restart the source server, the migration fails if the Print Manager was not successfully unloaded.

Possible Cause: The eDirectory attributes for the unloaded PSM are not cleaned up.

Action: Restart the Print Manager.

Migration fails when the Print Manager does not have a clean shutdown

Explanation: When the Print Manager does not have a clean shutdown, migration fails with an error message stating `this is an invalid print manager on target`.

Possible Cause: The eDirectory status for the Print Manager is not updated when the Print Manager shutdown is not clean.

Action: Restart the Print Manager.

Migration fails when a printer is assigned to a Print Manager

Explanation: The migration fails with an error message: CIMException encountered (general error): `Creation of printer <Printer FDN> (Eg: cn=Printer1,o=novell) object failed. Object exists, iPrintPrinterManager value indicates that the printer is associated with another ipsmd.`

Possible Cause: Trying to reassign a printer to a new Print Manager when the existing Print Manager assigned to this printer is down.

Action: Do not select the printer that is currently assigned to a Print Manager on the target server when it is down.

Migration fails when the SYS volume folder is not available on the source server

Possible Cause: The `sys:ndps` folder was renamed or deleted from the source server.

Action: Ensure that the `sys:ndps` folder is on the source server.

Migration fails for container admin credentials on the source server

Explanation: Printer objects with the container admin credentials are not being migrated.

Possible Cause: There is a mismatch between the source server and container admin credentials for the user. The source server might not be in the same container where full access rights are defined.

Action: Ensure that the user has the following rights and permissions assigned explicitly so that the user can access and execute `psminfo.nlm`:

- The read permission to the `sys:ndps` folder on the migration source server.
- Add the user as a trustee with supervisor rights to the source server NCP Server object.

Migration fails with an error message

Explanation: Migration fails with the following error message: `'OpenWBEM4::HTTPException' what(): Unable to process request: 401: Authentication failure Aborted`.

Possible Cause: The admin user is not correctly LUM-enabled.

Action: LUM-enable the admin user:

1. Run `yast2 novell-lum` from the command prompt.
2. Click **Continue**.
3. Enter the admin password.
4. Click **Next** and follow the on-screen prompts.

The Driver Store and Print Manager are not initialized after migration on the target server

Explanation: The Driver Store and Print Manager are not initialized on the target server when SLP configuration is used.

Possible Cause: Problems in SLP configuration before starting migration.

Action: Enter the `slptool findsrvs service:ndap.novell | grep <TREE NAME>` command to list the TREENAME. If the tree name is not listed, fix the SLP configuration. For details, see "Prerequisites" on page 41.

Printers not coming up after Transfer ID migration

Explanation: You migrate printers by using the Transfer ID option, but printers are not coming up.

Possible Cause: Printers are not being associated with the drivers after a Transfer ID action.

Action: Use the following procedure:

1. Run the `/opt/novell/bin/ipsmd -x /tmp/psmimport_idswap.xml -s <Server IP Address> -u admin -f` command on the OES 2018 SP3 console.
2. Enter the admin password.

Printer fails to install with the error “wrong printer URL”

Explanation: On successful migration, the redirected printers fail to install on the target server.

Action: If the iPrint service is configured with the IP address and if the source server is down, installation fails.

Ensure that the source server is up and running and then install the redirected printer.

Action: If the iPrint service is configured with DNS and the DNS is not resolved with the target server IP address, installation fails.

Ensure that the DNS is resolved to the target server IP address and then install the redirected printer.

Migration is completed with the status displaying as “Successful with warnings. Please refer the migration log”

Explanation: The message is displayed when the drivers associated with the printers are not migrated to the target server.

The printers are migrated, but you cannot install the printers for which the driver download or upload has failed.

Action: Check the migration log for the drivers that failed to migrate. Do not perform a migration; instead, manually upload or download those drivers to the target server.

Printers migrated from the source to target in the same context, are not migrated to the target in a different context

Explanation: When you migrate printers from the source to the target in the same context, then you restart the Printer Manager and try to migrate those printers again in a different context, the printers fail to migrate.

Action: Do not migrate printers in a different context if they have already been migrated from the source to the target in the same context.

Problems with accessing newly created printer agents after copying the padbtxt.xml file from the source to the target

Explanation: When you copy the `padbtxt.xml` file from the source to the `/opt/novell/iprint/share` directory on the target, the Migration Tool cannot access any newly created Printer Agents that were added to the source after copying the file.

Action: Copy the `padbtxt.xml` file from the source to the target everytime you create printer agents. When you select printers to migrate and migration passes successfully, but the printers selected for migration are still not migrated, one possible reason could be the presence of an outdated `padbtxt.xml` file in the directory. Remove the file and retry the migration procedure.

Redirections are not successful when printers are migrated

Explanation: When you redirect one printer to another on the source, migrate both the redirected printer and the other printer to the target, associate a driver to the redirected printer on the target server, then try to install the other printer from the target server, the printer installation fails. This is because this printer on the target server points to the redirected printer on the source, which does not have any drivers associated with it.

iPrintmig Man Page

- "iprintmig(1)" on page 228

iprintmig(1)

Name

iprintmig - Migration utility for iPrint

Syntax

This section contains iPrint commands and utilities used on the Linux platform.

`iprintmig -s` *<server>* `-u` *<user>* *<options>* `-n` *<printer1>...<printerN>*

`iprintmig -s` *<options>*

Description

iprintmig is a management tool used to migrate printers to OES 2018 SP3.

Options

-h, --help

Prints this summary.

-v, -vv, -vvv, -vvvv, -verbose

Specify the level of detail to display about the execution of operations with -v displaying minimum information and -vvvv displaying maximum information.

-V, --version

Prints version information.

-s *<server>*, --src *<server>*

Specifies the source server hostname or address to migrate from.

-d *<server>*, --dst *<server>*

Specifies the target server hostname or address to migrate to.

-D *<PSM DN>*, --dst-dn *<PSM DN>*

Specifies the destination print manager DN to migrate to.

-u <user>, --src-user <user>

Specifies the FDN format admin for the source server, such as cn=admin, 0=example.

-U *<user>*, --dst-user *<user>*

Specifies the FDN format admin for the target server, such as cn=admin, 0=example.

-p *<pass>* , --src-pass *<pass>*

Password of the source server admin user.

-P*<fd>*, --src-pass-fd *<fd>*

File descriptor number (to read the source admin password).

-t<*password*>, --dst-pass <*password*>

Password of the user on the target server.

-T<*fd*>, --dst-pass-fd <*fd*>

File descriptor number (to read the destination admin password).

-i<*IDS_server*>, --ids <*IDS_server*>

Target iPrint Driver Store (IDS) server hostname or address. Defaults to dst.

-I<*IDS_DN*>, --ids-dn <*IDS_DN*>

Distinguished name of the target IDS.

-e<*server*>, --edir <*server*>

Server hostname or address of the eDirectory server for the target server to use.

-n<*printer*>, --printer-name <*printer*>

Name of the printer to migrate. Can be specified multiple times.

-f <*file*>, -printers-file <*file*>

File containing names of printers (1 per line) to migrate.

-F <*fd*>, -printers-fd <*fd*>

File descriptor number listing names of printers to migrate.

-a, --all

Migrates all printers from the source.

-c<*DN*>, --dst-container <*DN*>

DN of the container to create print objects in (conflicts with -S).

-S, --same-dn

Creates objects on the target server with the same DN as the source server. Only valid when migrating to a new tree.

-H, --same-hostname

Creates a manager on the target server with the same hostname as the source manager. Useful when migrating the entire print server.

-x<*file*>, --xml-outfile <*file*>

Saves the XML migration processing file to <file>.

--o, --remoteDS-root-pass<*pass*>

Root password of the remote driver store server.

--O, --remoteDS-root-pass-fd<*fd*>

File descriptor number (to read the root password of the remote driver store server).

--q, --src-root-pass<*pass*>

Root password of the source server.

--Q, --src-root-pass-fd*<fd>*

File descriptor number (to read the root password of the source server).

--srcversion

Indicates the version of the operating system on the source server.

--nodrivers

Do not migrate drivers. If drivers are not present in the destination IDS, clients cannot install printers.

--overwrite-drivers

If the destination IDS has a driver with the same name as a corresponding driver on the source server, overwrite it.

--noacls

Stops migration of Access Control Lists (ACLs).

--noprofiles

Stops migration of profiles. If profiles are not present on the target server, clients cannot install printers.

--overwrite-profiles

Overwrites the target server profile for a driver with the same name as a profile on the source server.

--nogo

Prepares but does not perform migration. This option creates an output XML file and migrates drivers (unless `--nodrivers` was specified) but does not perform migration.

--debug

Prints debug messages to a `/var/opt/novell/log/migration/iprintmig.log` file.

--update

Synchronizes any changes in the source server data with the target server after the migration process is complete. This option must be used in conjunction with the `-a` option.

--resume

Lets you resume the migration process from where it was suspended.

--precheck

Validates the parameters passed for the migration process and returns the status without actually starting the migration.

--consolidation

Aggregates services on a single target server from multiple source servers.

--ssl

Enables secure authentication.

--port

Indicates the LDAP port.

--treeflattening

Creates the contexts of the source printers under a different context on the target server. The context of the target printer is specified by using the `-c<DN>, --dst-container <DN>` option.

--idswap

Migrates printers from the source server to the target server without changing their identities.

--driver-platform

Identifies the names of the platforms to migrate. All the drivers for the selected platforms are migrated. The driver platforms should be specified every time you configure the print options. For example, `--driver-platform "Windows XP" --driver-platform "Vista 64"`.

Using Passwords

For security reasons, it is safest to transmit passwords to the script via an environment variable or via the -P/-T options, because any user of the system can view the password if it is on the command line (-p/-t options).

Instead, have the calling program set its environment with the following two variables:

```
IPRINTMIG_SRC_PASSWORD=examplePassword1

IPRINTMIG_DST_PASSWORD=examplePassword2
```

Then you can execute the following command, which migrates all the printers from server1.example.com to the server where the script is being run.

```
iprintmig -s server1.example.com -u admin.example.us -U admin -a -x
psminfo.xml -I cn=ids,o=example,c=us  \-i ids.example.com -c
ou=iPrint,o=example,c=us
```

Examples

The following example migrates several printers at a time while explicitly specifying the hostname of the new print manager:

```
iprintmig -s server1.example.com -d newserver.example.com -u
admin.example.us -U admin -x psminfo.xml \ -I cn=ids,o=example,c=us -i
ids.example.com -c ou=iPrint,o=example,c=us -n printer1 -n printer2 \-n
printer3 -n printer4
```

If a calling program specifies a large number of printers, there are three ways to proceed:

- The -n (or --printer-name) option can be specified with a printer name one or more times, as in the example above. This can create a very long command line if many printers are being migrated, so this usage is discouraged.
- A file containing printer names, one per line, can be specified by using the -f (or --printers-file) option. For a calling program to use this file, the program must first write the list of printers to a temporary file.

- The calling program can avoid the use of a temporary file by using the -F (or --printers-fd) option, which allows the calling program to send the list of printer names over a pipe, such as a pipe created with socketpair(). When you use the -f (or --printers-file) option, printer names are read from the file descriptor, one per line.

  A simple example of this usage follows in C. Similar methods are available with the Mono.Posix.Syscall members.

```
char *printers[] = { "p1", "p2", "p3" };
  int fds[2], pid, rc;
  rc = socketpair(AF_UNIX, SOCK_STREAM, 0, fds);
  if (rc < 1)
  {
     perror("Error creating socket pair");
     exit(1);
  }
  pid = fork();
  switch (pid)
  {
     case -1: //Error
        perror("Fork failed");
        exit(1);
     case 0: //Parent
        close(fds[1]);
        for (int i; i < (sizeof(printers)/sizeof(char**)); ++i)
  {
     write(fds[0], printers[i], strlen(printers[i]));
     write(fds[0], "\n", 1);
  }
 close(fds[0]);
        break;
       default: //Child
       close(fds[0]);
       //Set an environment that contains the password env vars
      //Make sure that close on exec isn't set for fds[1]
     //exec the iprintmig script with "-F" and fds[1] converted from an
int to a string as arguments
  }
```

Notes

Most of the information that this program requires can be obtained from the eDirectory objects that you select. For example, to migrate all printers from a NetWare server to the new Linux server, you need to select the old PSM object, which contains the address of the server it is running on. Then you need to select the destination PSM, which has attributes for its network address, the eDirectory server it is using, and the IDS it is using. The corresponding IDS object has its own address.

There are some details that you must manually provide instead of selecting or discovering, such as details about credentials and whether or not to migrate profiles or drivers.

You can select a destination container to hold the objects created during migration, or you can choose to keep the same path for objects. This only works for a move from one tree to another, because NetWare objects already exist in the source tree and might conflict with the new Linux versions of the objects.

Authors

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See Also

iprintman

26 Migrating NetStorage to OES 2018 SP3

This section describes the procedures to migrate NetStorage from supported OES versions to OES 2018 SP3.

- "Migrating NetStorage to OES 2018 SP3" on page 235

Migrating NetStorage to OES 2018 SP3

The supported OES servers are referred as the source server and the OES 2018 SP3 server as the target server.

Prerequisites

Before proceeding to migrate, meet the following prerequisites:

- NetStorage is installed and configured on OES 2 SP3 32-bit machine.
- NetStorage is installed on target OES 2018 SP3 machine.

For more information about installing and configuring NetStorage, see "Installing NetStorage" section in the *OES 2018 SP3: NetStorage Administration Guide for Linux*.

What is Migrated

The following data is migrated from the source server to the target server:

- Xtier registry settings and configurations

Migration Procedure

Source Server

1. Backup the `/var/opt/novell/netstorage/shared` folder.
2. Backup the `/opt/novell/netstorage/webapp/WEB-INF/classes/Settings.properties` file.
3. At the terminal prompt use the following command to stop the xregd user: `rcnovell-xregd stop`
4. Export the registry available at `/var/opt/novell/xtier/xregd/db as` an xml file using the following commands:

   ```
   /opt/novell/xtier/bin/regutil -e srcReg.xml
   ```

Target Server

1. Copy the `/var/opt/novell/netstorage/shared` folder in the same volume and directory structure.
2. Copy the `/opt/novell/netstorage/webapp/WEB-INF/classes/Settings.properties` file in the same volume and directory structure.
3. Ensure that file permissions are retained.
4. Copy srcReg.xml to any location. For example, `/opt/novell/xtier/bin/regutil -i <location>/srcReg.xml`, where <location> is the location of your choice.
5. At the terminal prompt use the following command to stop the xregd user: `rcnovell-xregd stop`
6. Navigate to `/var/opt/novell/xtier/xregd/db/` and verify that the directory `db` is empty using the following command: `ls -l`. If the directory is empty, continue to step 5.
7. If any files exist in the db directory, move all the files to a temporary directory, say `/tmp`.
8. Generate files inside the xtier registry using the following commands:

   8a To restore the source server registry:

   ```
   /opt/novell/xtier/bin/regutil -i srcReg.xml
   ```
9. Navigate to `/var/opt/novell/xtier/xregd/db/` and run the command `ls –l /var/opt/novell/xtier/xregd/db` to ensure that the following files are generated:
   - `xtier_registry.db`
   - `xtier_registry.lck`
   - `xtier_registry.rfl`
10. Start the xregd user using the `rcnovell-xregd start` command.
11. Navigate to the xtier registry using the following command `/opt/novell/xtier/bin/regedit`.
12. At the regedit prompt, execute the `cd local_machine` command and `ls -l` command to view the contents inside the directory. If a directory named software is present in the local_machine directory, then the registry is rebuilt without any error.
13. Similarly, enter the following commands in the sequence listed along with ls -l command to view the content in the respective directories:
    - `cd software`
    - `cd Novell`
    - `cd Xtier`
    - `cd Configuration`

      If the content exists in all the respective directories, then the Xtier registry is completely rebuilt.
14. Enter `exit`.
15. Restart the machine.

Transfer ID - Same Tree

In this scenario, the target server is installed in the same tree as the source server. On successful completion of Transfer ID, the target server functions with the same credentials (such as IP address and host name) as the source server and source server node is no longer available in the network. For more information, see Chapter 10, “Using the Migration GUI Tool for Transfer ID,” on page 65

Post Migration

After migrating NetStorage,

- Login to iManager and go through the NetStorage Task, the configurations should have been properly migrated.
- Access NetStorage from a browser http://<IP-ADDRESS>/NetStorage/ and should be able to login and access files and folders.

27 Migrating NTP to OES 2018 SP3

Migration refers to the process of migrating Timesync services from a NetWare system to NTP on a Linux system. The OES Migration tool follows a source/target model.

The following sections give more details on the migration procedure for Timesync.

- "Planning the Migration" on page 239
- "Migration Scenarios" on page 239
- "Migration Procedure" on page 240
- "Post-Migration Procedure" on page 240

Planning the Migration

You can migrate the NTP services running on one of the following source platforms to the listed target platform:

Source Servers

- NetWare 6.5 SP8

Target Server

- OES 2018 SP3

Migration Scenarios

The following scenarios are supported for Timesync/NTP migration:

- Consolidation on the same tree
- Consolidation on a different tree
- Transfer ID on the same tree

  For details on these three scenarios, see "Migration Scenarios" on page 16.

Migration Procedure

Migration of NTP configuration can be done from the Migration Tool or through the command line.

The migration procedure reads the NetWare NTP/Timesync configuration file and maps its parameters to the equivalents in NTP Linux. During the migration process, the existing `ntp.conf` file is backed up and saved as `ntp.conf.old` in the `/etc` directory and the new parameters are saved in `/etc/ntp.conf`. If NTP is already configured on the target server while configuring eDirectory, this configuration is overwritten.

- "Using the Migration Tool to Migrate Servers" on page 240
- "Using the Command Line to Migrate Servers" on page 240

Using the Migration Tool to Migrate Servers

1. Launch the Migration Tool in one of the following ways:

   Desktop: Click **Applications > Other > Novell Migration Tools**

   Terminal: Log in as the `root` user and at a terminal prompt, enter `miggui`

2. Configure the source and target parameters.

   For details on configuring source and target server information, selecting a migration type, loading and saving a project, and all buttons, see Chapter 2, "Overview of the Migration GUI," on page 21.

3. Select **Novell NTP** from **Services** and click **Configure**. The status changes from **Not Configured** to **Ready**.

4. Click **Migrate** to start the migration process. The status changes from **Migrating** to **Migrated**.

   NOTE: Use the **Status** > **Logs** tab to check for errors during migration. Fix the errors and restart the migration procedure if necessary.

Using the Command Line to Migrate Servers

To run the NTP migration utility through the command line, run the following command on the target server with the required parameters:

```
migtime -s <source IP address>
```

For example:

```
migtime -s xxx.xxx.xxx.xxx
```

Post-Migration Procedure

Load the XNTPD daemon by entering the following command at the prompt:

```
rcntp restart
```

28 Migrating NCP to OES 2018 SP3

This section describes how to migrate NCP environment to OES 2018 SP3.

Before you proceed with the migration, review "Prerequisites" on page 241. In this section, the source server refers to a supported OES server and the target server refers to an OES 2018 SP3 server.

- "Prerequisites" on page 241
- "What is Migrated" on page 241
- "Migration Procedure" on page 241

Prerequisites

- OES server is already installed and NCP is configured. For details, see *OES 2018 SP3: NCP Server for Linux Administration Guide*.
- NSS Pools and volumes are already migrated to the new OES 2018 SP3 server. Use the cluster migrate `resource_name node_name` command to migrate the cluster pools and volumes. For details, see "Using the Cluster Migrate Command" in the *OES 2018 SP3: OES Cluster Services for Linux Administration Guide*.
- NCP (posix) volumes and non-cluster NSS volumes are already migrated to the new OES 2018 SP3 server. This can be done by unmounting the corresponding file system from the source machine and mounting it on the target machine.

What is Migrated

- Configuration files

Migration Procedure

1 Copy the following files from the supported OES server to OES 2018 SP3 server.
   - /etc/opt/novell/ncpserv.conf
   - /etc/opt/novell/ncp2nss.conf
   - /etc/opt/novell/ncp/ncp2nss.audit.conf
   - /etc/opt/novell/ncp/ncp2nss.log.conf
   - /etc/opt/novell/ncp/ncpserv.audit.conf
   - /etc/opt/novell/ncp/ncpserv.log.conf

IMPORTANT: The `/etc/opt/novell/ncpserv.conf file` contains the file server name in NCP_FILE_SERVER_NAME <server_name> format. If the source and target server names are different, ensure that you modify the parameter `NCP_FILE_SERVER_NAME` as `NCP_FILE_SERVER_NAME <new_server_name>` before proceeding to the next step.

2 After the files are copied restart ndsd daemon and ncp2nss daemon using the following commands on the target server:

```
systemctl restart ncp2nss.service

systemctl restart ndsd.service
```

29 Migrating OpenSLP to OES 2018 SP3

This section describes how to migrate OpenSLP environment to OES 2018 SP3.

Before you proceed with the migration, review "Prerequisites" on page 243. In this section, the source server refers to supported version of OES server and the target server refers to an OES 2018 SP3 server.

- "What is Migrated" on page 243
- "Prerequisites" on page 243
- "Migration Procedure" on page 243
- "Verification" on page 244

What is Migrated

- Configuration information
- Cache of service registrations

Prerequisites

Source Server

Back up the `/etc/slp.conf` and `/etc/slp.reg.d/slpd/DABackup` files on the source SLP DA server.

Target Server

The target OES server need not be a SLP DA server.

Migration Procedure

1 Copy the following files from the source SLP server to the target server.

- `/etc/slp.conf`
- `/etc/slp.reg.d/slpd/DABackup`

NOTE: The `/etc/slp.reg.d/slpd/DABackup` file will only be present in the source server if the `net.slp.isDABackup` parameter is set to true in the `/etc/slp.conf` file.

---

2 The following steps are needed only if the IP address of the target server is different from the IP address of the source server.

   2a If the SLP agent has been configured to listen on only selected interfaces in the `/etc/slp.conf` file, then after copying the configuration file to the target server, in the net.slp.interfaces section include the IP address of the target system.

   2b If DHCP is used in the network to advertise SLP Agent addresses to clients, then the `dhcpd.conf` file must be updated with IP address of the new system.

   2c If the SLP clients are configured to contact SLP agents through configuration files or by providing SLP Agent IP address in the Novell Client, then the changes should be manually updated on the clients.

3 Stop the SLP service on the source SLP DA by executing the following command:

```
rcstop slpd
```

4 Reboot the target SLP server.

Verification

Check if the Clients are able to connect to services already registered before migration and whose service registration life time is still valid.

30 Migrating Proxy users to OES 2018 SP3

This section describes how to migrate Proxy users to the OES 2018 SP3 server.

Ensure to review "Prerequisites" on page 41, before proceeding with proxy migration. In this section, the source server refers to supported version of OES server and the target server refers to an OES 2018 SP3 server.

- "What is Migrated" on page 245
- "Transfer ID Migration Procedure" on page 245

What is Migrated

- The proxy users (common proxy and service proxy users) and their access rights.

Transfer ID Migration Procedure

- "Using Migration GUI for Proxy Migration" on page 245
- "Using the Migration Commands for Proxy Migration" on page 246
- "Troubleshooting" on page 248
- "Enabling SSH" on page 248

Using Migration GUI for Proxy Migration

Beginning with OES 2015 or later, you can perform Common Proxy or Service Proxy migration using the Migration GUI tool.

The Transfer ID GUI now supports migration of Common proxy and Service Proxy and there is no need to perform any additional manual steps.

In the **eDirectory Precheck** step, the source server's proxy credentials are copied to the target server. In the **Repair** step, these proxy credentials are used to reconfigure the proxy user on the target server.

Supported Scenarios:

- Source server and target server are both configured with Common Proxy.
- Source server and target server are both configured with Service Proxy

Cross proxy migration (Service proxy to Common proxy or vice versa) or mixed proxy migration (service proxy + common proxy to target or vice versa) is not supported.

Using the Migration Commands for Proxy Migration

- "Services that are Using Common Proxy" on page 246

Services that are Using Common Proxy

- "Prerequisite" on page 246
- "Pre-Migration Procedure" on page 246
- "Proxy Migration" on page 247
- "Post-Migration Procedure" on page 247

Prerequisite

- Ensure that the source server and target server is updated with the latest patches.
- Enable SSH on the source server. For more information, see "Enabling SSH" on page 248.

Pre-Migration Procedure

Before services are migrated to OES 2018 SP3 server, you must identify the services using common proxy and the common proxy credentials on the source server.

1. On the source server, login as a `root` user.
2. Retrieve the common proxy credentials on the source server by executing the following commands:

   ```
   /opt/novell/proxymgmt/bin/cp_retrieve_proxy_cred username
   ```

   Displays common proxy DN.

   IMPORTANT: The dot format is not supported by the common proxy scripts. Ensure to use comma format for common proxy users and contexts.

   ```
   /opt/novell/proxymgmt/bin/cp_retrieve_proxy_cred password
   ```

   Displays common proxy password.

   Make a note of the common proxy credentials.
3. Identify the services using common proxy on the source server by executing the following command:

   ```
   /opt/novell/proxymgmt/bin/retrieve_proxy_list.sh
   ```

   This command writes all the OES services and their proxy users to the file `/var/opt/novell/log/proxymgmt/pxylist.txt`. Using the common proxy credentials that are identified in Step 2, determine the services using common proxy from the `pxylist.txt` file.

   IMPORTANT: Do not delete, modify, or rename the common proxy user from eDirectory.

Proxy Migration

Migrate all the services that are using common proxy to the target server. On successful migration proceed with the post-migration procedure.

Post-Migration Procedure

After the services are migrated to OES 2018 SP3 server, you must update OES Credential Store (OCS) on the target server with common proxy credentials and reconfigure the services using common proxy to use the updated credentials.

1 Update OCS on the target server with common proxy credentials retrieved in Step 2 on page 246.

1a On the target server, login as a `root` user.

1b Run the following command:

```
/opt/novell/proxymgmt/bin/cp_update_proxy_cred.sh
```

You are prompted to enter common proxy user DN and password. Enter details that are retrieved in Step 2 on page 246. This updates OCS with common proxy credentials.

2 Verify if common proxy credentials are updated properly by executing the following commands:

```
/opt/novell/proxymgmt/bin/cp_retrieve_proxy_cred username
```

Displays common proxy DN.

```
/opt/novell/proxymgmt/bin/cp_retrieve_proxy_cred password
```

Displays common proxy password.

3 Reconfigure the services identified in Step 3 on page 246 to use updated common proxy credentials.

```
/opt/novell/proxymgmt/bin/move_to_common_proxy.sh -d <Admin DN> -w
<Admin Password> -i <Destination system IP> -p 636 -s <comma separated
list of services>
```

For example:

```
/opt/novell/proxymgmt/bin/move_to_common_proxy.sh -d cn=admin,o=novell
-w novell -i 192.168.1.254 -p 636 -s novell-afp,novell-cifs,novell-dns
```

Troubleshooting

- “AFP Does Not Come Up After Transfer ID Migration to OES 2018 SP3 if Service Proxy is Configured” on page 248

AFP Does Not Come Up After Transfer ID Migration to OES 2018 SP3 if Service Proxy is Configured

AFP service configured with service proxy fails to come up after Transfer ID migration to OES 2018 SP3. This is because the service proxy users are not migrated to OES Credential Store (OCS). To resolve this issue, perform the following:

1. Login as a `root` user.
2. Run `yast2 novell-afp` and then enter eDirectory user password.
3. Specify the AFP proxy user password.
4. Click **Next** and continue with AFP configuration.
5. Verify the AFP service is up and running by using the following command:

   ```
   systemctl status novell-afptcpd.service
   ```
6. Verify the service entry is present in OES Credential Store by using the following command:

   ```
   oescredstore -l
   ```

Enabling SSH

1. Enable SSH on the source server and the target server.
2. Enter the `# ssh-keygen -t rsa` command on the target server.
3. When you are prompted to enter the file in which to save the key (`/root/.ssh/id_rsa`), press Enter.

   The ssh keys are stored in the default location.
4. When you are prompted to enter the passphrase (empty for no passphrase), press Enter.

   We recommend that you do not include the passphrase.
5. Copy the key value (the output of the `# ssh-keygen -t rsa` command) to the source server.

   ```
   # scp ~/.ssh/id_rsa.pub root@<source-server>:/root/
   ```

   where <source-server> is the IP address or the hostname of the source server.
6. Log in to the source server by using `ssh`. If the `.ssh` directory is not available, create the directory, then append the key value to the list of authenticated keys.

   ```
   cat id_rsa.pub >> /root/.ssh/authorized_keys
   ```